

**E-COMMERCE ADOPTION BY
MALAYSIAN SMES**

by

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DEDICATION

In the Name of Allah the Most Merciful and Compassionate

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ABSTRACT

E-commerce adoption among SMEs has been much discussed in management information technology and technological innovation literature. However, most of these prior studies focused mainly on e-commerce awareness or factors that influence e-commerce adoption. This study, on the other hand, attempts to develop a holistic insight into e-commerce adoption by SMEs. It investigates why some SMEs adopt e-commerce readily, and others do not. In addition, this study investigates the appropriateness of government support for SMEs encouraging them to adopt e-commerce. There is very little research that assesses e-commerce adoption by SMEs, certainly none as extensive as this, and there is also very limited empirical investigation of government support for SMEs to adopt e-commerce. This study helps to fill this gap by exploring these issues relating to e-commerce and SMEs.

The framework model proposed in this study was developed out of an integration of various perspectives using the technological innovation literature, specifically the DOI and TOE frameworks. This model considers internal factors (the demographic characteristics of managers and their organisations), external factors (particularly government support), and reasons for, benefits of, and inhibitors to e-commerce adoption. Data for this study were collected through a questionnaire survey of over three thousand SMEs in Malaysia and forty face-to-face semi-structured interviews with SME managers and government officials.

Results show there is a low level of adoption of e-commerce by SME managers whether or not they received government e-commerce supports. E-commerce usage hardly extends beyond e-mail. Online buying and complex websites, such as websites with online ordering and online payment facility are not common. Websites are used to provide contact details and information about the firm and information about its goods and services only, without displaying prices. The SME and SME manager demographic characteristics show significant association with e-commerce adoption. Two important factors that facilitate e-commerce adoption emerge from these characteristics namely SME location and

the manager's experience of living abroad. To encourage e-commerce adoption, SMEs in developing countries need not only to have appropriate technology infrastructure installed, but also to be in a location with good public transportation services and efficient delivery methods. SME managers also need experience of buying and selling on the Internet, which they might gain while living abroad. The interviews raise a number of questions about the effectiveness of government support programmes, and the ulterior motives of SMEs. The benefits of e-commerce are more often perceived than achieved. Interestingly, the reason that SMEs adopt e-commerce is to enhance company image, rather than its efficiency. From the research findings, a series of recommendations for e-commerce adoption among SMEs in Malaysia emerges, providing guidance for policymakers, practitioners, and academics. Many recommendations, such as the need to evaluate e-commerce initiatives, may perhaps be extended to government ICT policies in the developing world as a whole. The study exposes many gaps, often overlooked, between the rhetoric of e-commerce adoption and the reality.

The model proposed in this study may be comprehensive for e-commerce adoption in firms. Future research can build on and extend the proposed integrated model by including other potential factors from different contexts. It will be helpful to explore other statistical analysis, either in the current model or in an enhanced one. The findings will help towards a better understanding for firms and government and suggest a quantitative basis for them to determine favourable policies and conditions for expanding their e-commerce. This study provides the impetus for future research on many issues.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

This introductory chapter provides an overview and states the premises of this thesis. It outlines the background of research, purpose and the rationale of the study. It also describes the contributions of the study, and finally, it presents the structure of the remaining chapters of the thesis.

1.1 BACKGROUND OF THE RESEARCH

E-commerce has been described in the large body of literature that has emerged since the explosion of Internet technology. Empirical research, especially at the technological innovator level, suggests that e-commerce has a significant and positive impact on businesses everywhere (Daniel *et al.*, 2003; Pool *et al.*, 2006; Chuang *et al.*, 2007). The *E-commerce Times* website, for example, reported that US retailing online sales reached US\$141.4 billion in 2004 (Regan, 2005). Despite the recent economic downturn, the *EMarketer* website (2008) reported that UK business-to-consumer (B2C) e-commerce sales (including digital downloads and tickets for travel and events) were £59.8 billion (US\$116.6 billion) at the end of 2008, an increase of more than 28% over 2007. It also claimed that online sales will continue to rise steadily during the next two years (*EMarketer*, 2008). The *Forrester Research* website predicted that in the next five years, e-commerce sales will increase at a higher compounded average growth rate (CAGR) than in-store sales whether there is a recession or no recession (Quoc *et al.*, 2008).

In the UK, policymakers seem certain that e-commerce conveys undisputed benefits. Managers are assured that e-commerce will help their firms by reshaping customer and supplier relationships, streamlining business processes and, in some cases, restructuring the whole industries (Daniel, 2003; Pool *et al.*,

2006). Intense competition in both international and domestic markets has placed pressure on companies to improve their firms' quality, cost of products and services, management practices, and operations. In order to survive, the Organisation for Economic Co-operation and Development (OECD) therefore suggested SMEs in developing countries to fully utilise ICT, such as adopting e-commerce for business transactions (OECD, 1997). In 2009, the OECD reiterated the importance of e-commerce in business transactions by offering a wide range of advisory services aimed at assisting in the preparation of an enabling legal and regulatory environment for e-commerce in developing countries (OECD, 2009).

It has been suggested that SMEs may adopt e-commerce because of its immense benefits (Poon and Jevons, 1997; Daniel and Wilson, 2002; Daniel *et al.*, 2003; Martin and Matlay, 2003), as well as its ability to compete with large organisations (Riquelme, 2002). It is said that only through e-commerce can SMEs penetrate the global market, sell 24 hours a day, and seven days a week (Martin and Matlay, 2003). However, research shows that e-commerce, such as websites with online transaction capabilities, is still dominated by large multinational firms (Tassabehji, 2003). Therefore, neglecting e-commerce may inhibit SMEs from participating and competing in the global market.

Despite the benefits that e-commerce can offer to SMEs, the literature suggests that e-commerce has not been readily adopted by SMEs (Fillis *et al.*, 2004; Grandon and Pearson, 2004; Houghton and Winklhofer, 2004; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007), especially in developing countries (Sahadev and Islam, 2005). Even when e-commerce is adopted, evidences from many developed countries show that the adoption is still limited to e-mails and web pages (Grandon and Pearson, 2004; Ordanini, 2006; MacGregor and Vrazalic, 2007). For example, not many SMEs in the US adopt online transactions (Grandon and Pearson, 2004); whilst in the UK, the adoption of e-commerce has declined (Booz, 2002). In Australia and Europe, SMEs resist adopting e-commerce due to their sceptical perspective of online trading (Scupola, 2003; Ordanini, 2006; MacGregor and Vrazalic, 2007).

Also there is evidence of a lack of e-commerce adoption in developing countries (e.g., Lertwongsatien and Wongpinunwatana, 2003; Zhao *et al.*, 2008). For example, in China, very few SMEs are yet to complete transactions over the Web (Zhao *et al.*, 2008). The failure to fully adopt e-commerce is said to be due to insufficient IT infrastructure to support e-commerce activities (Lertwongsatien and Wongpinunwatana, 2003; Zhao *et al.*, 2008).

In the Malaysian context, although the government has provided initiatives and supports, most SMEs are not ready to adopt e-commerce (Ang *et al.*, 2003; Beal and Abdullah, 2002). Such resistance is also found in some Malaysian public listed companies (Adham and Ahmad, 2005). Although some companies have adopted e-commerce, the adoption is limited to the use of e-mails (Ang *et al.*, 2003).

1.2 RATIONALE OF THE STUDY

This section provides a rationale as to why conducting research on e-commerce adoption by the Malaysian SMEs is necessary. To understand this issue, an extensive literature review was conducted. The review of the literature rationalises this study into factors that facilitates the adoption of e-commerce, reasons for and benefits of e-commerce adoption, theoretical, contextual and the lack of empirical evidence for e-commerce adoption in Malaysia. These are briefly described in this section.

Factors that Facilitate the Adoption of E-commerce

Most of the literature on e-commerce adoption has mainly focused on the identification of factors affecting SMEs in adopting e-commerce, such as the determinants of, and constraints for, e-commerce adoption by SMEs (e.g., Abell and Lim, 1996; Poon and Swatman, 1998; Kendall *et al.*, 2001; Beveren and Thomson, 2002; Daniel *et al.*, 2003; Ordanini, 2006; Alam, *et al.*, 2007). These studies looked at the facilitators in the previous ICT adoption studies and examined if they were applicable to e-commerce studies. Therefore, there should be a well-documented body of knowledge that guides policymakers in the effective development and implementation of support programmes for SMEs to

adopt e-commerce. However, to date, little empirical work has been conducted to explore in-depth the factors that facilitate and hinder e-commerce adoption, particularly among SMEs. As such, companies should not assume that facilitators of other types of ICT are equally significant for e-commerce adoption. Moreover, many of the e-commerce adoption studies based on SMEs and their managers' perspectives have been conducted only by a few researchers; for example Mehrtens *et al.* (2001), Scupola (2003), and Ordanini (2006).

Reasons for, Benefits of, and Inhibitors to E-commerce Adoption

The literature shows that the reasons for SMEs to adopt e-commerce are slightly different from the factors that facilitate e-commerce adoption in larger firms (Corbitt and Thanasakitt, 2002; Scupola, 2003). Corbitt and Thanasakitt (2002), for example, argued reasons for adoption are more inclined to explain why SMEs made the decision to adopt, rather than what factors lead SMEs to make the decision. Not all facilitators of ICT adoption, of e-commerce in particular, are relevant as reasons for the adoption (Corbitt and Thanasakitt, 2002; Quayle, 2002). However, apart from studies by Corbitt and Thanasakitt (2002) and Quayle (2002), this researcher found that other studies did not make any distinction between reasons for and facilitators of e-commerce adoption.

SMEs play a critically important role in ensuring the “future prosperity of national economies” (Curran and Blackburn, 2001). However, little is known about the benefits gained by SMEs post e-commerce adoption or about the problems and constraints SMEs and their managers face in adopting e-commerce. Although there have been a number of studies conducted on the benefits of e-commerce (e.g., Daniel *et al.*, 2003; MacGregor and Vrazalic, 2007), most studies look at the perceived benefits rather than the actual benefits that SMEs gain after adopting e-commerce. Similarly, many studies on constraints faced by SMEs in adopting e-commerce do not explore in-depth these constraints. In addition, there have been few attempts to analyse reasons for SMEs lack of motivation to adopt e-commerce and why some SMEs discontinue e-commerce adoption.

Theoretical Rationale

There are many theories in the technological diffusion literature. Among them are Roger's (1995) diffusion of innovation theory (DOI), Davis's (1989) technology acceptance model (TAM), Tornatzky and Fleischer's (1990) technological-organisational-environmental model (TOE), and Azjen's (1991) theory of planned behaviour (TPB). TAM and TPB models focus mainly on user acceptance to analyse automation processes in the early phases of IT diffusion (Ordanini, 2006). DOI and TOE models, on the other hand, have been used to analyse IT diffusion on both users and organisations. These two models are more suitable and powerful to understand the predictors of technology adoption, particularly by organisations (Zhu *et al.*, 2003). Indeed, most studies on IT adoption at the firm level are derived from theories such as these two (Chong *et al.*; 2009).

Both DOI and TOE frameworks, which emphasise predictors of ICT adoption, have been widely adopted by various ICT studies (e.g., Kuan and Chau, 2001; Zhu *et al.*, 2003; Xu *et al.*, 2005). Previous studies have shown that DOI is consistent with the TOE framework (Kuan and Chau, 2001; Zhu *et al.*, 2003; Zhu *et al.*, 2006a; Oliveira and Martin, 2011) because the elements involved in both frameworks are almost similar. Hence, some researchers combined both predictors in DOI and TOE, and some used the predictors in both frameworks interchangeably to understand firm innovation diffusion, particularly the predictors of technology diffusion. These two frameworks will be adapted in this study, particularly in identifying the facilitators of e-commerce adoption.

Contextual Rationale

It should also be noted that most studies on e-commerce adoption are conducted in the developed countries, such as the US, the UK, and Australia. As stated earlier, there are few studies on e-commerce adoption by SMEs in developing countries, including Malaysia. Malaysia was one of the 'Asian miracle economies' with its pro-market economy and seemingly transformative capacity (Wong, 2003). Malaysia is said to be one of the countries with the most systemic and substantive socioeconomic and cultural transformations via ICT (Wong,

2003). ICT, particularly e-commerce, is considered to be very important in Malaysia and the government has taken an active role in its establishment. Many ICT policy initiatives, such as the e-commerce grant, RosettaNet, and e-Manufacturing (SMIDP, 2001-2005) have been designed to encourage businesses, especially SMEs, to adopt e-commerce. While an extensive range of government funded ICT initiatives, particularly e-commerce support, is available to SMEs in Malaysia, this researcher believes that the support did not adequately address the needs of the SMEs. Thus, a study of e-commerce adoption should provide policymakers with a better framework through which different needs of SMEs could be identified and supported. However, to date, little is known about the intensity of e-commerce adoption among SMEs and to what extent government ICT policy initiatives have helped SMEs to embark on e-commerce. There have been very limited empirical investigations on government assistance for SMEs to adopt e-commerce.

A review of the extant literature suggests that in attaining a holistic understanding of e-commerce adoption among SMEs, a more comprehensive e-commerce model is required (Mehrtens *et al.*, 2001; Scupola, 2003; Ordanini, 2006; Scupola, 2009). Therefore, this study attempts to integrate the issues surrounding e-commerce, such as the facilitators of e-commerce adoption, reasons for and benefits of e-commerce adoption, government support, and problems and challenges SME managers face in adopting e-commerce. According to Manders and Brenner (1994), experiences of the decision makers combined with knowledge will provide better understanding on e-commerce adoption. In line with this view, this study attempts to investigate the actual and current situation of e-commerce among SMEs in Malaysia from the perspective of SMEs and their managers.

1.3 SCOPE OF THE STUDY

This research focuses on the adoption of e-commerce by Malaysian SMEs, in both manufacturing and service sectors. The study attempts to highlight the factors that facilitate SMEs to adopt e-commerce within the country, the reasons for adoption or non-adoption of e-commerce, and the benefits gained. It also

takes government ICT programmes into consideration; particularly policy initiatives that are concerned with e-commerce.

There is no universal definition for SME. For this study, the European Union employment definition of SME, as 'a firm with fewer than 250, but more than 10 employees', was adopted (Ismail and King, 2007). However, e-commerce is defined as 'the sharing of business information, maintaining business relationships, and conducting business transactions by means of Internet-based technology' (Scupola, 2003). This study is limited to non-Electronic Data Interchange (EDI) e-commerce. The use of EDI requires high investment costs, and thus, is not popular amongst SMEs in Malaysia (Ang *et al.*, 2003; Lin *et al.*, 2011).

This study is conducted in two stages. The first stage is the preliminary study involving website analyses and telephone interviews with SME managers. The second stage is the main study involving a large-scale survey and interviews (including both face-to-face and via telephone) with SME managers in Malaysia.

1.4 OBJECTIVES OF THE STUDY

The objective of this study is to investigate the actual and current situation of e-commerce adoption by SMEs in Malaysia. Towards this end, the study will look into the influence of government funded e-commerce grants on SME e-commerce adoption. More specifically, the objectives of this research are:

1. to investigate to what extent SMEs in Malaysia have adopted e-commerce;
2. to identify the internal factors that facilitates e-commerce adoption;
3. to investigate external factors i.e., the influence of government grants in e-commerce adoption;
4. to investigate the reasons for e-commerce adoption and its benefits; and
5. to identify the factors that inhibits e-commerce adoption.

1.5 CONTRIBUTIONS OF THE STUDY

The study findings make at least five important contributions towards understanding e-commerce adoption among SMEs:

1. While most previous studies have focused on the adoption facilitators of e-commerce, this study will generate a comprehensive understanding of e-commerce adoption by SMEs. It will present a holistic view about e-commerce adoption by SMEs, by integrating the factors that facilitate SMEs to adopt e-commerce, problems and challenges, reasons for e-commerce adoption and its benefits. Furthermore, this study provides an understanding on the role of government support for SMEs to adopt e-commerce.
2. This study adds value to the organisation of technological diffusion literature. The proposed framework will be developed from an integration of various perspectives using technological diffusion literature; specifically using DOI and TOE frameworks as a reference discipline. This framework will focus on organisational demographic characteristics. The particular use of the demographic characteristic approach provides the researcher with a near-real situation, as faced by SMEs. By utilizing these frameworks, this study provides new insights into e-commerce adoption in developing countries.
3. This study will provide comprehensive insights about e-commerce adoption. The understanding of these issues will contribute to the policy development of effective support for SMEs. It will also help government to design programmes and initiatives that are tailored towards SME needs.
4. This study contributes to the existing literature on SME e-commerce development, by suggesting that SME management faces major decision dilemmas i.e., e-commerce adoption drive. If they did not adopt e-commerce, they may be left behind. However, if they do adopt, they will need to invest; in terms of money and effort. This study will provide information to practitioners, academicians, and policymakers about the understanding of e-commerce adoption by SMEs in Malaysia i.e., the

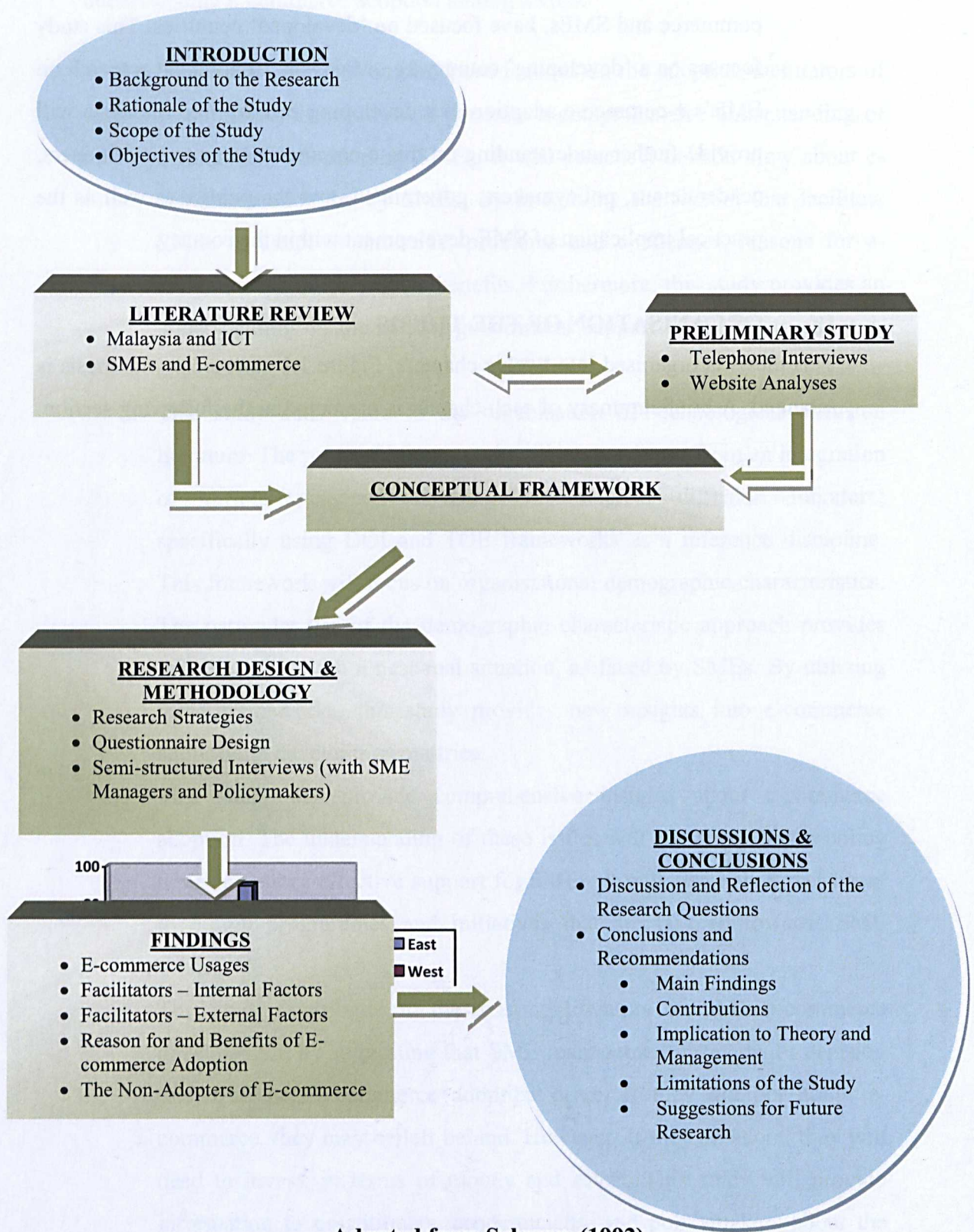
pros and cons, the constraints that SMEs face, and the government support for SMEs to adopt e-commerce.

5. Finally, it is important to highlight that most of the existing studies on e-commerce and SMEs, have focused on 'developed' countries. This study focuses on a 'developing' country i.e., Malaysia. Conducting research on SME's e-commerce adoption in a developing country like Malaysia will provide further understanding on this e-commerce issue to practitioners, academicians, policymakers, government, and the public; as well as the practical implication of SME development within the country.

1.6 ORGANISATION OF THE THESIS

This thesis is organised into twelve chapters. Figure 1.1 shows how the thesis is arranged. A brief summary of each chapter is presented in the following section.

Figure 1.1: Thesis structure – overview of the research process and corresponding chapters



Adapted from Sekaran (1992)

The first chapter gives an overview of the thesis, identifies the research problems, and summarises the reasons for undertaking the research.

Chapter Two reviews the context of this study, which focuses on Malaysia. The development of the Malaysian economy is discussed to demonstrate how it has been transformed from an agricultural to a knowledge economy. A review of the development of the Multimedia Super Corridor (MSC) is also provided.

Chapter Three discusses the main concepts involved in this thesis. This chapter starts by reviewing concerns about SMEs, such as its importance, definition, and strengths and weaknesses of SMEs. Discussions of the definition of e-commerce as well as the business activities are provided. Relevant theories, namely the diffusion of innovation (DOI) and technological-organisational-environmental (TOE) frameworks, are discussed.

Chapter Four describes the preliminary study. The preliminary study consists of the field work, i.e., the telephone interviews with eight SME managers; and the analysis of SME websites. The findings of the preliminary study are presented here.

Chapter Five outlines the conceptual framework and discusses the key elements to be studied. A more detailed description of these elements, namely the factors that facilitate e-commerce adoption among SMEs and reasons for, benefits of, and inhibitors to e-commerce adoption among SMEs, are provided here.

Chapter Six outlines the research method used in collecting data for this study. The chapter starts with a discussion of the epistemological stance of the research, followed by the choice of research strategies used in this study. The strategies adopted in this study include website analysis, survey, and both telephone and face-to-face interviews. The main empirical work was the survey with 3,535 SMEs all over Malaysia, and semi-structured interviews with policymakers and SME managers in the country. The logistics of the study is described in this chapter.

Chapters Seven to Eleven display the results for the survey and the interviews. Chapters Seven to Ten are structured to present the empirical data, a large postal survey, and the results of the semi-structured interviews. Each chapter focuses on a specific research question. Chapter Seven presents findings regarding e-commerce usages among SMEs. Chapter Eight reports the findings on the internal factors that may facilitate SMEs to adopt e-commerce. Chapter Nine describes the findings on the external factors, namely, government support. Chapter Ten reports reasons for and benefits of e-commerce adoption by SMEs.

Chapter Eleven presents the findings from both face-to-face and telephone interviews with SME managers regarding the inhibitors from the perspectives of non-adopters of e-commerce.

Chapter Twelve discusses the findings of the study. It presents the interpretation of the findings in the previous chapters and makes reflection based on these findings. It describes the meaning of the findings from the survey and interviews and compares them in the light of previous findings made by other researchers.

Chapter Thirteen presents a conclusion to the research, and Table 13-1 provides an overall summary of the research objectives and their respective research contributions. It discusses the contributions and implications of the study to both theory and practice. The limitations of the research and suggestions for future research are also included.

1.7 CONCLUSIONS

This chapter has presented the rationale for this study, thereby fully justifying the effort expended in undertaking the research. It describes the aims of this study, and outlines the structure of the thesis. Generally, this study seeks to investigate a holistic understanding of e-commerce adoption among SMEs in Malaysia.

In the following chapter, the context of the study is presented. It describes Malaysia and how its economy has been transformed from agricultural to knowledge-based with ICT as the backbone.

CHAPTER 2

THE CONTEXTUAL: MALAYSIA AND ICT

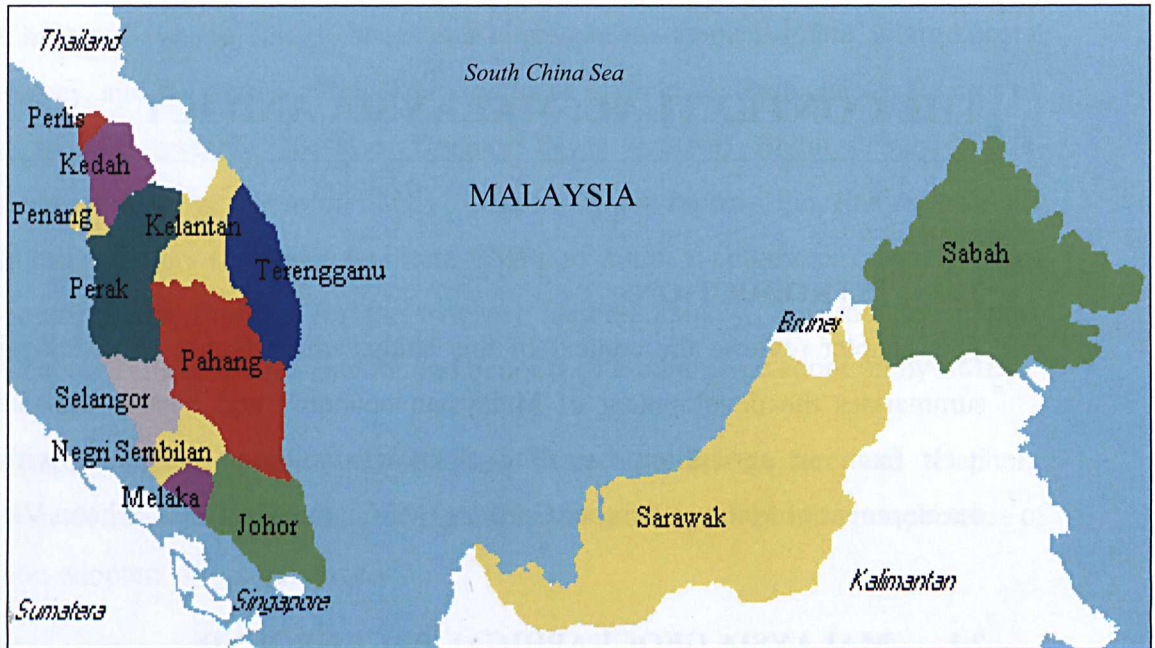
2.0 INTRODUCTION

This chapter reviews the context of this study, which focuses on Malaysia. It summarises the development of Malaysian economy and how it transformed itself from an agricultural-based to a knowledge-based economy, with the development of Malaysian Super Corridor (MSC), the Malaysian Silicon Valley.

2.1 MALAYSIA GEOGRAPHICAL BACKGROUND

Malaysia is located in the heart of Southeast Asia and comprises two parts facing each other, separated by the South China Sea: Peninsular Malaysia and East Malaysia (see Figure 2.1). Peninsular Malaysia is a long portion of land that extends from the border of Thailand to Singapore. It consists of eleven states and two federal territories, namely Kuala Lumpur and Putrajaya. East Malaysia is the other part of the land, consisting of two states that are Sabah and Sarawak, and one federal territory, namely Labuan. It shares the Borneo Island with the Kalimantan region of Indonesia and Brunei Darussalam. Altogether, Malaysia is a federation of thirteen states and three federal territories and covers an area of 329,733 square kilometres. The total population of Malaysia (as of September 2008) was 27.7 million, with an annual rate of population growth at 2.6% (Malaysia, 2008a).

Figure 2.1: Map of Malaysia



Source: Perpustakaan Negara (Malaysia, 2008a)

Malaysia is a tropical country, subject to maritime influences and the interplay of wind systems originating in the Indian Ocean and South China Sea. The weather is warm and humid throughout the year with average daily temperature variations from 21°C to 32°C (Malaysia, 2008b). Due to monsoonal rains, flooding and landslides are two natural hazards faced by the country, especially during the northeast monsoon rains, which usually occur from October to February. In terms of land usage, 68% is still covered with forests and woodland, 12% covered with permanent crops, 3% arable land and 17% is residential and recreational (Abdul Wahab, 2004). Natural resources found in Malaysia include tin, petroleum, timber, copper, iron ore, natural gas, and bauxite (Malaysia, 2008b). The strategic location for economic development is along the Strait of Malacca (Melaka) and the southern South China Sea. Metropolitan cities are situated along the west coast of Peninsular Malaysia, namely the capital city, Kuala Lumpur, Ipoh, and Georgetown.

2.2 BRIEF MALAYSIA HISTORICAL BACKGROUND

Malaysia (previously called Malaya) was colonised between 1511 and 1957. The Portuguese ruled Malacca from 1511 to 1641. The Dutch captured Malacca from

the Portuguese and ruled for almost the next 150 years (Malaysia, 2008a). In 1786, the British acquired Penang Island, located in the northwest of Peninsular Malaysia and established Georgetown. Gradually the British gained control over more of the area to protect shipping routes between China and India. In 1819 Britain established a trading post on Singapore Island.

During colonial rule, the British introduced rubber trees from Brazil and established rubber plantations in the late 1800s. Tin mining was also expanded and labourers were badly needed to boost revenue. The British brought in workers from China to work in the tin mines and workers from India to work in the rubber estates. On the other hand, the indigenous Malays were left to farm for a living, especially in the paddy fields, in order to increase rice and food production (Abdul Wahab, 2004).

The Japanese invaded Malaya and Singapore in 1942 and ruled for three years until World War II ended. Although the British were able to resume their authority in the region after the collapse of Japan in 1945, they faced an entirely new political situation and those circumstances forced them to adopt new policies. As a result the Straits Settlements (which include Penang Island, Malacca, and Singapore) were dissolved. Penang Island and Malacca were joined with the Malay States of the Peninsular to form a Malayan Union (Swee-Hock, 2006). The Malayan Union was then abandoned in favour of the Federation of Malaya in 1948. Under this new constitutional framework, the Malay Rulers remained sovereign in the nine Malay states, while Penang and Malacca were administered as British territories. Singapore was excluded from Federation and was governed as a separate British colony (Swee-Hock, 2006). In 1957 the Federation of Malaya gained complete independence from Britain, and was called Malaya. The name 'Malaysia' came into being in 1963, when Singapore, Sabah and Sarawak joined Malaya in a federation (Malaysia, 2008a). However, in 1965, Singapore withdrew from the federation peacefully and became independent.

Malaysia is a multi-racial country with a mix of people from many different races and cultures. Most of the Malays and other indigenous people, known as the Bumiputra¹, work in the agricultural sector, manufacturing, or in government services. The Non-Bumiputra (the Chinese, Indian and other races), particularly the Chinese are mostly in the commercial private sector and self-employed, while the Indians are mostly in the estate, government service and commercial sectors (Abdul Wahab, 2004). Islam is the official religion and freedom of religion is practised in Malaysia. Bahasa Melayu is the official language, while other languages, namely English, Chinese dialects, Tamil, Punjabi and other East Malaysian indigenous languages, are widely spoken (Malaysia, 2008a).

2.3 MALAYSIAN ECONOMY: FROM AGRICULTURAL TO INDUSTRIAL TO KNOWLEDGE-BASED ECONOMY

Before independence, the Malaysian economy was dominated by agricultural and mining industries, such as rubber, palm oil, cocoa, and tin (Muhd Salleh and Meyanathan, 1993). The economy was private-sector driven and highly dependent on foreign trade to generate foreign exchange earnings to finance its development (Malaysia, 2005b). Realising the structural weaknesses of the economy, the government began to promote industrial development by giving tax concession to the pioneer industries (Malaysia, 2005b). However, this import-substitution strategy failed in the absence of awareness of modern technology and the ability to master new technology (Anuwar, 1992). As a result, the labour absorption capacity of the manufacturing sector was low, only one-sixth of that in the agricultural sector (Fong, 1986).

Industrialisation accelerated after the mid-1960s under the provisions of the Investment Incentives Act (IIA) and the formation of the Malaysian Industrial Development Authority (MIDA). The IIA was introduced in 1968 to encourage expansion of manufactured exports by providing export incentives to new and existing industrial establishments (Mohd Osman, 2001), which was a change from import-substitution to export-oriented industrialisation (Jomo, 1994). The

¹ The term 'Bumiputra' means indigeneous race ('son of the soil') of Malaysia. It is usually used in reference to Malays, and encompasses other indigeneous communities in Malaysia (Rani and Muhd Salleh, 1994).

economy grew very rapidly during this period (Malaysia, 2005b); however, there was insufficient emphasis on distributional aspects of ownership and employment within ethnic groups in Malaysia. The imbalance of economic distribution among the races in Malaysia was one of the factors that sparked a bloody racial riot on 13 May, 1969². As a result, the New Economic Policy (NEP) was introduced in 1971 with its aim to remedy economic problems and achieve a balanced development for the nation. This was done by increasing income levels for all Malaysians and of restructuring Malaysian society to erase all racial identification in economic terms (Malaysia, 2005b). The NEP called for a financial redistribution and reduction of inequality between Bumiputras and Non-Bumiputras. A 30% equity ownership target was set for Bumiputras (Rani and Muhd Salleh, 1994).

Progress towards this NEP target was slow. The 1975 Industrial Co-ordination Act (ICA) was intended to encourage Bumiputra participation in the manufacturing sector. This Act was supposed to ensure orderly development and growth in the manufacturing sector (Malaysia, 1998) and also to achieve Bumiputra employment and equity participation, particularly in manufacturing firms (Anuwar, 1992). All manufacturing firms with an overseas partner were required to submit project proposals to the Ministry of International Trade and Industry (MITI) to ensure that contracts would not impose unfair restrictions on Malaysian firms (Malaysia, 1998).

The 'eighties witnessed a major structural transformation of the economy. The manufacturing sector became the fastest growing sector with a growth rate of 10.4% per annum (Malaysia, 2005b). The decade also saw further diversification of the economy into more advanced and heavy industries, and the production of the Proton, the 'national car' (Anuwar, 1992). The logic was that the nation needed to reduce its dependence on imports of capital and intermediate goods to sustain growth, to generate a host of subsidiary support industries, and to emulate

² Malaysia has been an ethnically-diversified nation since British colonial rule, when immigrants from China and India were brought to live and work in the country. The indigenous Malay majority has been economically backward compared with the Chinese community (Yasuda, 1991).

the experience of other rapidly developing countries, which indicated that strong heavy industries were vital to economic success (Malaysia, 2005b).

The 'nineties began with the declaration of the National Development Policy (NDP) and Vision 2020. The NDP focused on employment creation, rapid development of manufacturing sectors, greater reliance on the private sector, and enhancing human resource development. The development of national confidence was provided by the NDP and Vision 2020. The slogan 'Malaysia Boleh!' (Malaysia Can Do It!) was heard everywhere. The economic growth of the 'eighties had contributed largely to the popularity of Mahathir Mohammad, the fourth Prime Minister, as had his idea for the Proton, the national car. Vision 2020 is Mahathir's vision, and it caught the imagination of Malaysians.

Mahathir launched Vision 2020³ in 1991. This vision envisaged Malaysia becoming a developed nation and fully industrialised country by the year 2020 (Malaysia, 2005b). The developed nation status envisioned by Mahathir was not one that mimicked other nations, but rather one that would be appropriate to Malaysia, one with moral values (Bernama, 2003). To achieve this, many big projects were launched, such as the Kuala Lumpur International Airport (KLIA) project, Kuala Lumpur Tower (MKL) and the Malaysia Twin Tower. Many in the developed world criticised Mahathir's projects, but to no avail Mahathir continued with other expensive projects. The intention was not only to fulfill the Vision 2020 plan, but also to show to the world that Malaysia had the capability to do even more. With the advice of the consultancy McKinsey and Co. (Vicziány and Puteh, 2004), the government embarked on its own Silicon Valley.

By the time Malaysia's Silicon Valley was proposed in 1995, the Malaysian economy was growing at 8.4% per annum (Malaysia, 2005b). The labour force

³ The nine aims of Vision 2020 are: (1) establishing a united Malaysian nation made up of one Malaysian race; (2) creating a psychologically liberated, secured and developed Malaysian society; (3) fostering and developing a mature democratic society; (4) establishing a fully moral and ethical society; (5) establishing a mature liberal and tolerant society; (6) establishing a scientific and progressive society; (7) establishing a fully caring society; (8) ensuring an economically just society, in which there is a fair and equitable distribution of the wealth of the nation; and (9) establishing a prosperous society with an economy that is fully competitive, dynamic, robust and resilient (Malaysia, 2006).

grew and unemployment fell from 7% in 1985 to 3% in 1995 (Malaysia, 2005b). The rural population declined from 58% in 1980 to 46% in 1995, with a commensurate rise in urban dwellers (Malaysia, 2005b). Malaysia had been transformed from a predominantly rural economy to an urban one (Vicziány and Puteh, 2004). However, in the late 1990s, Malaysian economic growth declined as a result of the 1997 Asian financial crisis. Although it caused a setback (negative economic growth of 7.4% was recorded (Malaysia, 2001)), the country was spared the more extreme effects, such as high unemployment, mass poverty, and massive bankruptcies (Malaysia, 2005b). Efforts to stimulate the economy were launched in late 1998, which resulted in an economic growth of 7.2% in 1999 and 2000 (Malaysia, 2001).

The performance of the Malaysian economy in the new century, especially in 2001 and 2002, was adversely affected by the slowdown of the world economy, particularly in the United States, as well as the continuing weak performance of the Japanese economy (Abdul Wahab, 2004). The situation was worsened by the September 11 incident in the US, the Iraq invasion and sporadic terrorist attacks around the world, and the outbreak of Severe Acute Respiratory Syndrome (SARS) (Malaysia, 2001-2005). Despite these problems, the Malaysian economy managed to grow at an average rate of 3% per annum with per capita income increasing by 2.4% per annum, the inflation rate stable, and the unemployment rate low at 3.5% (Malaysia, 2005a).

The new century also witnessed the launch of the National Vision Policy (NVP) in 2001. The NVP focuses on building a resilient and competitive nation (Malaysia, 2005b). It incorporates the key strategies of NEP and NDP while encapsulating new policy dimensions, such as the knowledge-based economy. The knowledge-based economy, enabled by the government's ICT policies, was to propel the country to developed-nation status by the year 2020. ICT enhancement, particularly the Malaysian Silicon Valley, was to have top priority for the government (Malaysia, 2001-2005).

2.4 MALAYSIA AND NATIONAL ICT POLICY

One of the main objectives of Vision 2020 is for Malaysia to become an 'information-rich' society. This was spelled-out in Mahathir's Vision 2020 speech, the most explicit statement about the importance of the information revolution for Malaysia's future (Vicziány and Puteh, 2004):

"There is no information-rich country that is poor and underdeveloped. ... No effort must be spared in the creation of an information-rich Malaysian society."

(Mohamad, 1991, p. 9)

The Malaysian government, with Mahathir as its ICT champion, facilitated ICT applications and advanced manufacturing technology in the manufacturing sector by building the infrastructure required to promote the usage of ICT in the public and private sectors (Malaysia, 1996-2000). Mahathir encouraged computer literacy, believing that ICT could provide knowledge as the basis of power and prosperity (Mohamad, 1991). Although Mahathir stepped down as Prime Minister in 2003, the ICT agenda remains. For example, the Malaysian government has increased its ICT expenditure from RM7.9 billion (approximately US\$2.3 billion) under the Eighth Malaysian Plan (8MP) to RM12.9 billion (approximately US\$3.6 billion) under the Ninth Malaysian Plan (9MP) (Prathaban, 2006).

"Computer literacy is a must if we want to progress and develop as an information-rich society."

(Mohamad, 1991, p.10)

Malaysia's commitment to ICT intensified in the mid-1990s (Minges *et al.*, 2002), with emphasis on technology application and development. During this period, the Prime Minister's Department appointed the National Information Technology Council (NITC) to determine the necessary strategies for Malaysia to be a fully-industrialised country by 2020. The NITC, composed of the Prime Minister, the Malaysian Institute of Microelectronic Systems (MIMOS), and members of the public, private and community sectors, is an advisory group to drive the use of ICT as a strategic technology for national development. It recommended a National Information Technology Agenda (NITA) in December 1996.

NITA is a list of plans formulated for the development of ICT in Malaysia. It is responsible for the foundation on which ICT is to convert Malaysia into a 'knowledge-based information society' with emphasis on the use of technology in processing and disseminating information. The NITA is to transform Malaysia into an information society, then a knowledge society, and finally a knowledge-based information society using ICT as the enabler (UNDP, 2001). The agenda entails the formation of a new Ministry of Energy, Communications and Multimedia (MECM, the country's ICT policymaker), the development of the Malaysian Communications and Multimedia Commission (MCMC, the ICT regulator), the Multimedia University (MMU, the ICT institute of higher education), and the Multimedia Super Corridor (MSC, the country's answer to Silicon Valley) (UNDP, 2001).

2.4.1 The Multimedia Super Corridor (MSC)

The Multimedia Super Corridor (MSC), which emerged from the recommendations of the National Information Technology Council (NITC), MIMOS and McKinsey & Co., is a government project to create a large industrial park for technology transfer and multimedia development (Viczyan and Puteh, 2004). It was developed to provide a sophisticated network of ICT facilities and services. A total of RM2.3 billion (approximately US\$0.7 billion) has been allocated to investment in ICT-related programmes (Malaysia, 1996-2000). It has four aims: to enhance domestic productivity; to create the ideal multimedia environment for world-class firms working in a regional hub; to create value from information age businesses; and finally to leapfrog Malaysia into a 'knowledge-based information society' (MIMOS, 2004). The goal of MSC is to attract both national and international investors. Spill-over effects are to benefit the rest of the Malaysian economy (Malaysia, 1996-2000; UNDP, 2001).

Like other technology/industrial/science parks, MSC has several property-based initiatives (see, Massey *et al.*, 1992; Macdonald and Joseph, 2001, p.332), which involve formal operational links with universities, research centres, and other institutions. It has a high technology communications infrastructure, training facilities and other amenities. Its tenants include both foreign and domestic firms.

Physically, the MSC is 15 kilometres wide by 50 kilometres long. It comprises several key locations within the Klang Valley, known as Cybercities. These include the Cyberjaya Flagship Zone (the hub of the MSC and an 'intelligent city'), Technology Park Malaysia (TPM, centres for R&D activities), Universiti Putra Malaysia - Malaysian Technology Development Corporation (UPM-MTDC, an incubation centre for R&D and technology-development activities), Kuala Lumpur City Centre (KLCC, a building to house commercial establishments), and Menara Kuala Lumpur (KL Tower, the nation's premier telecommunications and broadcasting centre). MSC is connected to various developed countries through a high-speed broadband network capable of supporting extensive public administration, education, and business applications (Minges *et al.*, 2002).

There are at least three agencies which supervised the implementation of MSC: the Multimedia Development Corporation (MDC), the International Advisory Panel (IAP) and the Implementation Council Malaysia (ICM). MDC was appointed in June 1996 (MDC, 2006b). It advises the Malaysian government on legislation and policies, developing MSC-specific practises, and setting standards for multimedia operations (MDC, 2006b). The government appointed an IAP, made up leading industry figures and academicians. It advises the Malaysian government on strategies for the development of the MSC. The government also established an ICM, led by the Prime Minister, and consisting of ministers and leaders of the government agencies directly involved in the MSC project. The ICM is to provide direction to the MDC and to ensure the successful implementation of the MSC. Having three bodies responsible for developing the MSC has led to considerable bureaucracy.

These bodies initiated seven flagship applications: electronic government, telehealth, smart schools, a national multipurpose card, R&D clusters, electronic commerce, and technopreneur (ICT-entrepreneur) development. Later, e-commerce combined with what is called the 'manufacturing worldwide web' to form electronic business (e-business) flagship (MDC, 2006b). Through these applications, the government sought to attract as many leading ICT organisations

as possible. These were to locate their firms in the MSC to conduct research, develop new products and technologies, and finally export from this base (Ismail, 2002). In addition, the government invited foreign firms to use the MSC as a global test bed for ICT applications and a hub for their regional operations in Asia (Minges *et al.*, 2002). Eligible firms are those that are heavy users or providers of multimedia products, employ a substantial number of knowledge workers, and are able to transfer technology to Malaysia. Firms with MSC-status are entitled to additional privileges and taxation relief and also qualify for Malaysia's 10 point Bill of Guarantees⁴ (MDC, 2006b).

The government's contribution to Malaysian high technology policy, particularly the MSC, has been fundamental. Yet the MSC lacks clarity. Malaysian plans from 1990 to 2009 (6MP, 7MP, 8MP and 9MP) do not provide any evidence of how and why MSC was formed. Exactly how Vision 2020 is linked to MSC is unclear. Malaysians were simply told that the MSC is essential for a developed country and information-rich society (Minges *et al.*, 2002); it is what Vicziany and Puteh (2004) call a 'magical incarnation'.

The second problem is the number of firms in the MSC. Few firms have MSC status yet. There were only 2006 firms with MSC status by the end of 2008 (MDC, 2009), after twelve years of operation. Most MSC firms tend to see the MSC as a place to set up a regional headquarters for marketing and distribution, or technical support, rather than for product development. For example, Microsoft's office in Kuala Lumpur provides only sales and technical support to the local market (Mohd Osman, 2001). By offering modern infrastructure and liberal subsidies, the MSC is supposed to attract participation from major ICT

⁴ The 10 points of the Bill of Guarantees, the government promises to: (1) provide a world-class physical and information infrastructure; (2) allow unrestricted employment of local and foreign knowledge workers; (3) ensure freedom of ownership by exempting firms with MSC Malaysia Status from local ownership requirements; (4) give the freedom to source capital globally for MSC Malaysia infrastructure, and the right to borrow funds globally; (5) provide competitive financial incentives, including no income tax for up to 10 years or an investment tax allowance, and no duties on import of multimedia equipment; (6) become a regional leader in intellectual property protection and cyber laws; (7) ensure no Internet censorship; (8) provide globally competitive telecommunications tariffs; (9) tender key MSC Malaysia infrastructure contracts to leading firms willing to use the MSC Malaysia as their regional hub; (10) provide an effective one-stop agency - the Multimedia Development Corporation.

firms. However, the more established Singapore Science Park or the Bangalore Silicon Plateau are favoured (Mohd Osman, 2001).

Another problem currently affecting MSC firms, especially SMEs, is difficulty in raising venture capital (Einhorn, 1999). These problems became more severe after the Asian Financial Crisis in mid-1997, and were exacerbated when Malaysia introduced financial controls in 1998 (Mohd Osman, 2001). Many MSC firms are now struggling to survive (Einhorn, 1999). They have become the 'living dead', a graphic American expression for those high technology firms which do not create resources, but simply endure (Macdonald, 1983). An increased supply of venture capital is essential for the successful implementation of the MSC concept. Without an injection of foreign venture capital, the MSC project may be delayed, since domestic venture capital firms have not been very keen for the firms they support to locate to the MSC (Mohd Osman, 2001).

The MSC, like many other high technology projects in other countries, is the product of substantial government intervention. Such projects are to resuscitate national economies (Macdonald, 1983). The MSC is presented as a successful project:

“Since its inception, the Multimedia Super Corridor initiative has shown results that have exceeded expectations. The following is the brief recapitulation of the major events and happenings that have brought the MSC to where it is today: The birth of MSC in 1995, the launch of 7th Malaysian Plan in 1996, the first MSC and IAP meeting in Stanford University in 1997, ... the launch of MSC phase 2 in 2003.”

(MDC, 2006a)

While the MSC fascinates the Malaysian government, not even 10% of the Malaysian population, especially in the rural areas, know what MSC is (Jalani and Hussein, 2005). Many firms and especially SMEs are reluctant to locate in the MSC area because it is too costly and the environment is not appropriate (Mohd Osman, 2001). Foreign MSC-status firms feel that the MSC area is not an attractive location (Prathaban, 2006). So, has the MSC accomplished its goals? There are very few studies that look into the Malaysian government's policy or

projects. There is a desperate need for investigation of projects, particularly the MSC projects. This is one of the important gaps in this study. One of the MSC flagship applications in need of investigation is e-commerce, particularly for SMEs.

2.5 CONCLUSIONS

This chapter describes the background of this study. It demonstrates the development of the Malaysian economy from an agricultural to a knowledge-based society that focuses on ICT. A review of the development of the Multimedia Super Corridor (MSC) is provided. The seven flagships of MSC, which includes e-commerce, are also presented.

In the following chapter, the main concepts involved in this study are discussed. It reviews SMEs and e-commerce, and discusses e-commerce adoption by SMEs.

CHAPTER 3

LITERATURE REVIEW: E-COMMERCE AND SMES

3.0 INTRODUCTION

This chapter begins with an overview of SMEs and e-commerce, and their importance. It reviews various technological diffusion literatures and looks at the various ICT policies for SMEs, particularly e-commerce programmes designed in developed countries and in Malaysia.

3.1 SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs)

Small and medium-sized enterprises (SMEs) have always formed the backbone of national economies. Indeed, most governments regard the SME sector as a major driver of the economy and a source of employment opportunities (MacGregor and Vrazalic, 2007). Nevertheless, the development of most countries during the last two centuries has been based, mainly on large firms. But this situation changed during the 1970s, and was more apparent in the 1980s, particularly in the diffusion of information technology, when low cost hardware and operating systems were made available in the market for the first time (Ordanini, 2006). Generally, ICT promised to provide SMEs with the same potential opportunities for efficiency and cost savings that had already been offered to large organisations. However, in spite of these changes, the speed of ICT adoption among SMEs was slower than that of larger organisations, thus creating a so-called 'digital divide' phenomenon (Ordanini, 2006).

3.1.1 Definition of SMEs

Every country has its own definition of SMEs and there is no formal categorisation of what constitutes an SME (Ghobadian and Galleary, 1996; Mohd Asri, 1999; Curran and Blackburn, 2001). Even within countries, definitions of SMEs vary (Beaver, 2002) rendering definitions that vary even amongst those government agencies as each seems to have its own criterion. This is further complicated by definitions varying over time (Hashim and Wafa, 2002).

However, these varying definitions do suggest that any definition of SMEs must include a quantitative component that takes into account staff levels, turnover, and assets, together with financial and non-financial measurements, and that the description must also include a qualitative component that reflects how the business is organised and how it operates (Meredith, 1994). In general, though, many researchers define SMEs using its quantitative criteria, such as number of employees, amount of capital, amount of assets and sales turnover (Yap *et al.*, 1992; Hashim and Wafa, 2002).

Nevertheless, there are two common ways of defining SMEs found in the literature. One is the definitions based on financial turnover and the other is the definitions based on number of employ (Curran and Blackburn, 2001). Definitions based on financial turnover however, have been found to be problematic (Curran and Blackburn, 2001) as this is difficult to measure, and varies by sector (Storey, 1994). Critics argue that financial turnover changes over time with inflation (Bridge *et al.*, 1998). Thus, definitions based on number of employees are more acceptable, and most commonly used by policymakers (Curran and Blackburn, 2001) and researchers (e.g., DeLone, 1988; Raymond, 1992; Cragg and King, 1993; Cragg, 2002). Employment size is considered more objective and transparent compared to turnover (Curran and Blackburn, 2001), and also more practical as “information about employment is readily available and ... considered by managers to be less confidential” (Pratten, 1991, p.93; Mohd Osman, 2001).

For the purpose of this study, SMEs are defined by the number of people employed by the firm. More specifically, consistent with Ismail and King (2007) and Mohd. Osman (2001), an SME is defined as a firm employing 10 to 250 employees. This is also in line with the definitions of SMEs used in other countries (European Commission, 2002). Very small firms (fewer than 10 employees) will be excluded since these are likely to approach IT issues very differently (Hussin *et al.*, 2002) and because their numbers would swamp those of larger SMEs. The exclusion of very small firms in studies of ICT is consistent

with earlier studies, such as Kula and Tatoglu (2003), Igbaria *et al.* (1997) and Ismail and King (2007).

3.1.2 The Significance of SMEs

SMEs play an important part in the economic activities of most nations (Curran and Blackburn, 2001; Beaver, 2002; Simpson and Docherty, 2004). There are numerous examples in the literature that illustrate the weight that SMEs carry in their own national economies. In most European countries, SMEs constitute more than 90% of businesses (OECD, 1998; 2000; Scupola, 2003). In the UK, for example, there are an estimated 3.7 million businesses of which 99.8% are SMEs (DTI, 2001). SMEs account for between 30% and 70% of the gross domestic product of most countries (OECD, 1997). SMEs also contribute between 40% and 70% of job opportunities, providing most new employment, especially in high technology and other innovative sectors (OECD, 1997; 1998; 2000). SMEs hold the key to a country's economic future and remain as major players in the market (Hill and McGowan, 1999; Curran and Blackburn, 2001). They are considered to be the life blood of modern economies (Ghobadian and Gallear, 1996). In fact, many SMEs now sell their goods and services beyond the boundary of their local market (Rodriguez, 2005). Moreover, a number of SMEs sell business services, such as consultancy and market research, where returns come from brain power and creativity rather than size (Curran and Blackburn, 2001).

In Malaysia, SMEs form the bulk of firms in the country and they play a critical role in the country's industrialisation. They account for 99.2% of a total of 552,804 establishments covered in 2003 (Malaysia, 2007c). There were approximately 1,641,390 small businesses registered with the Registrar of Business (ROB) in 1999 (Malaysia, 1999b). In addition, there were 501,158 limited firms registered with the Registrar of Companies (ROC) in 1999, of which about 80% were SMEs (Malaysia, 1999c). So, there were about 2 million SMEs in Malaysia in 1999. However, a large proportion of firms on the Registrars have either ceased trading or have never traded at all (Abdul Wahab, 2004).

3.1.3 Strengths and weaknesses of the SME

Organisational studies have early on identified size as a critical variable in the performance of an organisation (e.g., Chen and Hambrick, 1995; Hofer, 1975), R&D expenditures (Cohen and Klepper, 1996), and innovation (Hitt *et al.*, 1990). Large firms are characterised by a set of advantages such as economies of scale, experience, brand recognition and market power (Hambrick *et al.*, 1982). However, large firms do not bring only advantages. A number of problems have been identified in large firms, such as a more complex organisational structure with a natural tendency to bureaucracy and also a lack of flexibility that makes change very difficult to accomplish (Chen and Hambrick, 1995).

On the other hand, SMEs, despite their size and being faced with a number of constraints (which will be explained in the next section), are more flexible than large firms. Their small size allows for an efficient and informal communication network, they are able to react quickly to any shift in the market place, and their lack of bureaucracy lets them implement change easily (Rothwell, 1991; Storey, 1994). They have the flexibility to try new approaches, because their processes, structures and systems are simpler than those of larger firms (Ghobadian and Gallear, 1996; Daniel and Grimshaw, 2002). SMEs are also more cost-effective than large firms. They can be the seed-bed from which large firms grow, and the breeding ground for new business ventures and entrepreneurs. Since they are small, they spend less on fixed assets, such as buildings and machinery. SMEs are also more likely to be 'people oriented' than 'system oriented' (Ghobadian and Gallear, 1996). SMEs has also been found to have the ability to be close to customers and adaptable to their demands; they excel at serving niche markets demanding specialised products in small volumes (Rothwell, 1991). Research in both Europe and America (Johnson and Cathcart, 1979; Rothwell, 1984) shows that SMEs are more responsive to market needs than large firms, more adaptable to change, and more innovative in their ability to meet customer demand.

Nevertheless, SMEs have drawbacks as well. They tend to be disadvantaged in a number of ways compared to large firms. They have less ability to influence their wider environment and their activities are usually dictated by the market (Curran

and Blackburn, 2001). SMEs also lack capital and credit facilities, skilled labour and infrastructure, resulting in limited efforts in research and development (R&D). In addition, managers do not have enough time and/or resources to identify external sources of scientific and technological expertise, or to comply with complex governmental trade regulations (Rothwell, 1991). Compared to large firms, SMEs have a lesser chance for survival.

Empirically, studies have consistently shown that small firms have higher failure rates than larger firms (Rothwell, 1991; Storey, 1994, Curran and Blackburn, 2001; and Rao *et al.*, 2006). In the UK, for example, more than 400,000 SMEs cease trading each year - with a similar number of new ones being created (Bank of England, 2003). Almost 30% of new firms cease trading by the third year and 50% by their fifth year of operation (BERR, 2008). A report by the Business High Street website (2007) revealed a 17.2% rise in business failure among SMEs in the retail sector in 2006 and many were forced to cease trading. Only very small proportions of new SMEs were able to survive and grew to employ 50 or more workers (Business High Street, 2007).

Most SMEs find it difficult to survive simply because they are small. If a small firm wants to engage in a large project, it does not have an economic cushion to fall back on if anything goes wrong (Rodriguez, 2005). SMEs are unable to tolerate volatile cash flow for long (OECD, 1998). They tend to offer a limited product line, rely on a few customers and cannot compete with larger firms that have economies of scale (Rothwell, 1991). They need to fulfil government requirements which sometimes distract managers from value-adding activities. With time and resources at a premium, day-to-day activities keep SME managers extremely busy, giving little opportunity for devising strategies for the firm (Rothwell, 1991).

3.1.4 SMEs and Large Firms Relationship

Although SMEs and large firms have different characteristics, under certain circumstances, those characteristics can be complementary and add value to both of them. According to Rothwell and Dodgson (1994), there are dynamic

complementarities between large firms and SMEs. Indeed, SMEs are often a crucial component in large firms' technological change activities, and vice versa (Rothwell and Dodgson, 1994, p.321). Both large firms and SMEs have their relative roles in an innovation cycle and would get benefit from each other. In high technology industries, such as the pharmaceutical and biotechnology, large firms often struggle to adapt to frequent radical technological changes (Carter and Jones-Evans, 2006). So, they hire small innovative firms to help them. In this way, the large firms would get access to new technologies and products, while small firms could get access to the large firms' resources (Carter and Jones-Evans, 2006).

There are many ways that both large firms and SMEs can gain mutual benefits. Such cooperation can take many forms, such as subcontracting relationship, licensing agreements, and strategic alliances or joint-ventures. Table 3.1 summarizes some modes of large and small firm association.

Table 3.1: Some modes of large and small firm association

Associations between SMEs and large firms	SMEs and large firm gains
Manufacturing subcontracting relationship	SMEs supply components and sub-assembly to large firms. As part of this process, large firms frequently transfer technological, manufacturing, and quality control knowhow to their small suppliers.
Joint ventures	SMEs provide specialist technological knowhow and entrepreneurial dynamism of an innovative new product containing technology new to the large partner. Large firms provide financial, manufacturing, and marketing resources.
Licensing agreements	Large firms provide license to small firms for innovative new developments, which usually involves technology that the large firm does not wish to exploit in-house, but from which it wishes to gain a financial return.
Contract-out R & D	Large firms fund targeted R & D in small specialist consultancy firm, for example, by automobile firms funding R & D in specialist engine developers; pharmaceutical firms funding R & D in small biotechnology firms.
Producer/customer relationship	SMEs supply finished products to large firms. Large firms transfer technology knowhow and supply suggestions for improvements to small suppliers based on user experience.

Source: Adapted from Rothwell and Dodgson (1994, p.322)

In general, through a dynamic complementary relationship, SMEs can gain (Alvarez and Barney, 2001):

- access to the financial capability needed to bring new technologies or products to the market;
- access to other large firms resources;
- social legitimacy; and
- a buffer from their liability of smallness, enhancing their chances of survival and boosting sales growth and profitability.

On the other hand, large firms gain (Alvarez and Barney, 2001):

- access to new technologies;
- state-of-the-art engineering talent;
- overall inventive capability;
- better managed technological uncertainty faced in competitive environments;
- lesser task associated with R & D activities; and
- focus on core area strategic activities.

3.1.5 SMEs in Malaysia

After its independence in 1957, the Malaysian government promoted large industrial enterprises, mainly run by the state, with incentives such as free trade zones and tariff protection. Industrial expansion was left to the multinationals, while SMEs development was limited to quasi-governmental structures designed to assist with the provision of small loans, advisory services and infrastructure support (Hashim and Wafa, 2002).

The Malaysian government has recognised the need to assist in solving SMEs problems, such as inadequate finance and lack of access to commercial banks credit experienced by Bumiputra small business owners⁵ since the early 60s. The primary objective in the First Malaysia Plan (1MP), launched in 1961, was to

⁵ In the Malaysian context, a discussion on small-sized enterprises is always associated with medium-sized enterprises (Abdul Wahab, 2004).

promote the Bumiputra economic equity ownership to 30% in a Chinese business dominated economy (Hashim and Wafa, 2002). After the 1969 crisis, the concern for SMEs expanded. The government formulated and implemented the NEP to reduce poverty among Bumiputras as their *per capita* income was only half of the Chinese (Hashim and Wafa, 2002). The Malaysian authorities further emphasised the government's effort in promoting and assisting SMEs. This included acknowledging SMEs as the training ground for future entrepreneurs, restructuring the racial economic imbalance between Bumiputra and Non-Bumiputras, and mobilizing the private savings of the middle classes for investment in industrial ventures (Hashim and Wafa, 2002).

In order to help and coordinate the activities of SMEs, the government established the Small Enterprise Division in the Ministry of Trade and Industry in 1981. The government also established the Division of Small-Scale Industry in the Ministry of National and Rural Development at the end of 1981, in an effort to assist the SMEs in the manufacturing sector. The government expanded the SMEs programme by introducing an incentive system for SMEs that produce innovative ideas. These incentive systems include grants, financial assistances, award schemes and tax incentives (Malaysia, 1998). The government also fund SMEs for research and development, particularly those in the manufacturing sector (Malaysia, 1998). A number of development programmes was introduced to assist SMEs, such as the 1988 Vendor Development Programme (VDP) and the 1990 Industrial Technical Assistance Fund (ITAF). Both programmes were initiated to develop SMEs in manufacturing into a dynamic sector capable of supporting the larger industries. However, the 1980s did not provide the rapid industrial development as projected. The ITAF programme overall has not been successful in enhancing the technological development of SMEs in Malaysia. Two major constraints inhibited Malaysia's progress in technology: (1) shortage of skilled manpower, especially those with managerial and technical expertise, both in large organisations and SMEs; and (2) the failure to make industrial R&D a strategic priority (Mohd. Osman, 2001).

In the early 1990s, the government continued to assist SMEs to venture into export markets by identifying the potential gateways and establishing offshore distribution centres. The government addressed various development issues pertaining to SMEs in the National Development Council (NDC), chaired by the Prime Minister. The Council made the decision to implement a new set of policy guidelines for the development of SMEs in January 1992. Four specific issues in the guidelines are: (1) SMEs should contribute to the development of a balanced economy and a more equitable distribution of income, (2) SMEs should complement and support the large-scale, heavy and modern industries through a network of industrial linkages, (3) SMEs should produce quality and high value-added products and services for the domestic and export markets and contribute to national output, and (4) SMEs should increase their productivity through the use of modern technology and management practices to increase their competitiveness in the export market.

The rapid development of SMEs in Malaysia may be best observed in the mid-'90s when Mahathir launched the Second Industrial Master Plan (IMP2). In his message, Mahathir clearly indicated the importance of SMEs to the country:

“The small and medium industries play an important role in the economy and they must therefore be integrated into the mainstream of industrial and technological development ... SMIs are crucial in increasing the Malaysian content of the industrial process in the wake of increasing competition for foreign direct investment (FDI). Developing competitive Malaysian SMIs with a global orientation and world-class operation structure is imperative to sustainable and resilient growth of the manufacturing sector.”

(Mohamad, 1996, p.3)

Foreign direct investment (FDI) is an important component of the national strategy for economic development and growth (Mohammad, 1996). It facilitates the transfer of assets like capital and technology, and access to export markets, skills and management techniques. It also plays an important role in SME development, either through joint ventures with local partners or through the establishment of wholly foreign-owned enterprises (Chin, 2005). Many Malaysian SMEs rely on FDI, especially in the electric and electronic, and metal-

fabrication sectors. It is expected that SMEs will boost their productivity not just by receiving foreign capital, but by the transfer of technology through FDI which will give substantial spillover benefits for the entire economy. Despite the proliferation of FDI, the impact on SMEs remains unclear (Quah, 2007). Many Malaysian SMEs are still incapable of surviving changes in technology and the demands of the global market (Chin, 2005). There is an inadequate supply of skilled workers to meet the needs of home-grown SMEs, in part because foreign firms offer better conditions of employment (Quah, 2007).

The government has long assisted SMEs. Part of the reason is because SMEs face enormous obstacles such as lack of access to finance, insufficient internal resources and management capabilities, and legal and regulatory barriers pose significant challenges (Hashim and Wafa, 2003). In Malaysia, the manufacturing sector was given priority because it accounted for 35.8% of GDP, the biggest share in the Malaysia economy (Abdul Wahab, 2004). Most of the data on SMEs is concentrated in the manufacturing sector. However, the government, through Abdullah Badawi, the successor to Mahathir Mohammad, has developed an interest in the service sector. The number of firms in the service sector has increased and 96.8% are SMEs (SMIDEC, 2005; Department of Statistic Malaysia, 2005). All government agencies now are responsible for SMEs in the service sector.

There are at least twelve ministries and forty government agencies involved in the development of Malaysian SMEs (Malaysia, 2004). There are two main ministries: the Ministry of International Trade and Industry (MITI) and the Ministry of Entrepreneur Development (MED). The main aim of MITI and MED is to coordinate SME programmes and create awareness amongst SMEs about available assistance (SMIDP, 2001-2005). Other ministries act as supporting agencies to MITI and MED, and also have their own SME programmes. This has led to the overlapping of programmes and assistance in different ministries and agencies. There is no central agency that controls or monitors all these programmes. Nor is there a complete database of SMEs in the country.

Under MITI, the Small and Medium Industries Development Corporation (SMIDEC) was established in 1996 as the principal agency for the development of SMEs in the manufacturing sector. Other MITI agencies involved with SME development include the Multimedia Technology Development Corporation (MTDC), the Malaysian Industrial Development Finance (MIDF), the National Productivity Corporation (NPC), and the Malaysian Trade Development Corporation (MATRADE). Through these agencies, the government provides a variety of aids to SMEs, such as incentives, loans, and grants. These include encouraging high technology ventures, tax cuts, developing efficient operations, and improving health and safety standards (Malaysia, 2001-2005). The government intends to transform SMEs into a more dynamic sector with high value added. SMEs are to be capital intensive and to exploit high technology. ICT is the backbone of the plan, and e-commerce a fundamental part.

3.2 ELECTRONIC COMMERCE (E-COMMERCE)

The idea of conducting business transactions via electronic media, rather than face-to-face, has been discussed for decades (Slyke and Belanger, 2003). However, the term 'electronic commerce' (e-commerce) has only emerged as a significant topic in the literature, especially for business and academic research, more recently, basically since the Internet started to be used commercially in the early 1990s. E-commerce is said to replace the traditional way that people do business. Many authors insist that e-commerce has a significant and positive impact on businesses everywhere (Daniel, 2003; Brown and Lockett, 2004; Pool *et al.*, 2006). Policymakers and managers seem certain that e-commerce conveys benefits, insisting that firms which eschew e-commerce will be left behind in the global marketplace (Daniel and Grimshaw, 2002; Quayle, 2002; Scupola, 2003; Ordanini, 2006). Many have predicted that e-commerce will give a tremendous boost to trade. Indeed, it is predicted that e-commerce will link firms with the global market so that geographical boundaries and locations no longer hinder business transactions (Lewis and Cockrill, 2002).

E-commerce and electronic business (e-business) are sometimes used interchangeably (Bartels, 2000). However, they are actually different phenomena

(Bartels, 2000; Laudon and Traver, 2002). E-business refers to the broader term of the information systems under the control of the firm. This includes the internal processes, such as production, inventory management, product development, risk management, finance, knowledge management, and human resources (Bartels, 2000). E-commerce, on the other hand, is a subset of e-business, a narrower term of the information systems under the control of the firm (Bartels, 2000). It focuses on the commercial transactions between and among organisations and individuals in electronic networks (Laudon and Traver, 2002). This includes all business activities that lead to any transactions that involve the exchange of value across organisational or individual boundaries in return for products and services that are mediated by digital technology, especially the Internet.

3.2.1 Defining E-commerce

Though the term 'e-commerce' is widely used, there is no agreed definition as to what it is (Kendall *et al.*, 2001; Daniel and Wilson, 2002). Zwass' e-commerce definition is among the first. He defines e-commerce as "sharing of business information, maintaining business relationships and conducting business transactions by means of telecommunication networks" (Zwass, 1996, p.1). His definition focuses on three main business activities that occur in any telecommunications network that includes telephones, computer networks, and the Internet.

Later, other e-commerce definitions emerged in the literature. Among the definitions of e-commerce often found in publications are:

- the seamless application of ICT from its point of origin to its end point along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal (Wigand, 1997, p.2);
- the process of buying and selling or exchanging products, services, and information via computer networks, including the Internet (Kalakota and Whinston, 1997, p.3; Turban *et al.*, 2003); and
- doing any business electronically (Timmers, 1999, p.10).

However, over the years, many researchers have coined other definitions, depending on their research context and objectives (Grandon and Pearson, 2004), whilst some researchers adapted others' e-commerce definition. For example, Pool *et al.* (2006) adapted Zwass' (1995) e-commerce definition - investigating all the three business activities but focusing on the Internet as the medium rather than telecommunication networks. Daniel *et al.* (2003) used Kalakota and Whinston' (1997) e-commerce definition, but they focused on the Internet rather than the computer networks in general.

No matter what the definition, there are two common elements in e-commerce. First, e-commerce concerns activities that occur by electronic means, such as sharing business information, and buying and selling. The second element is the technological means that enable these activities. The difference lies in how some researchers define these two elements. Some define the e-commerce term as generally as possible, including all business activities carried out over any electronic media (e.g., Wigand, 1997; Colecchia, 1999; Timmers, 1999). Others are comfortable with more specific definitions and focus on certain activities or technological means (e.g., Zwass, 1996; Kalakota and Whinston, 1997; Beveren and Thomson, 2002; Turban *et al.*, 2003). For the purpose of this study, Zwass's definition (1996) of e-commerce is adapted, focusing on Internet-based technology.

“E-commerce is sharing of business information, maintaining business relationships, and conducting business transaction by means of Internet-based technology”.

This definition is used because it allows the researcher to investigate all other potential business activities that occur via the Internet. This definition has been used by many other researchers such as Poon and Swatman (1999) and Pool *et al.* (2006), and MacGregor and Vrazalic (2007).

3.2.2 E-commerce Background

E-commerce has existed for nearly a century, probably starting in 1910 when the Florists' Telegraph Delivery Incorporation linked 15 florists to exchange out-of-town orders for flower arrangements in the United States using the telegraph

(Hayes, 2002). However, e-commerce linking computers has its roots in the Berlin Airlift when Berlin was blockaded by the Soviet Union in June 1948 (Hayes, 2002). Food had to be flown in. In order to track thousands of tonnes of cargo each day, the US army devised a standard manifest system that could be transmitted by telex or telephone. In 1968, the Transportation Data Coordinating Committee (TDCC) was formed to develop these standard electronic manifests. In 1975, the TDCC published its first electronic data interchange (EDI) specifications (Hayes, 2002).

EDI is often considered the next phase of development of e-commerce. EDI is the electronic transfer of standardised electronic business transaction documents and information between a sender and a receiver computer (Zwass, 1996; Tassabehji, 2003). It is usually used to transfer electronic documents from one computer system to another, perhaps from one trading partner to another trading partner. At first, EDI was intended simply as a replacement for paper (Swatman and Clarke, 1990). Subsequently, the benefits from integrating EDI with existing business practices encouraged the development of multi-organisational systems (Swatman and Clarke, 1990). Typical businesses documents exchanged by EDI include purchase orders, invoices, and cheques (Erridge *et al.*, 1998). Many other e-commerce applications, such as stock trading and travel reservation systems, evolved from EDI (Zwass, 1996; Turban *et al.*, 2003). Wal-Mart, Levi Strauss, General Motors and many other firms have built new kinds of relationships with their suppliers and customers through these electronic linkages (Zwass, 1996, p.18). It is said that EDI offers the possibility of substantially reducing transaction costs in the process of purchasing goods and services (Erridge *et al.*, 1998).

The next development of e-commerce came with commercial use of the Internet (Wigand, 1997). According to Zwass (1996), 1993 marked the start of “e-commerce over the Internet”. E-commerce over the Internet is rapidly developing into a major economic activity. Since transactions go through the Internet, some studies (e.g., Cooper and Burgess, 1998; Poon and Swatman, 1998; 1999; Poon, 2000; Poon and Joseph, 2000; Scupola, 2002; 2003) suggested that the term

'Internet commerce' (I-commerce) should be used to describe e-commerce over the Internet. However, most researchers preferred the universal term 'e-commerce' (Kendall *et al.*, 2001; O'Keefe, 2001; Paynter and Lim, 2001; Begin and Boisvert, 2002; Daniel and Wilson, 2002; Darch and Lucas, 2002; Rao *et al.*, 2003; Santarelli and D'Altri, 2003; Sharma and Gupta, 2003; Yeung *et al.*, 2003).

There are also recent attempts to combine EDI with the Internet (Internet EDI transactions - WebEDI). It is said that WebEDI require less set-up costs and fewer software applications than EDI (Beck *et al.*, 2005). It is also said that WebEDI will make businesses more accessible and more user friendly. This, according to Beck *et al.* (2005), enabled SMEs to reap the benefits of EDI while avoiding expensive investments in EDI translator systems. Despite the benefits associated with WebEDI, its diffusion among SMEs is still a critical issue for information systems research (Beck *et al.*, 2005). Not even 5% of SMEs in Germany have used WebEDI in their businesses (Beck *et al.*, 2005).

3.2.3 E-commerce Adoption

There is a wide range of phrases to describe e-commerce adoption in business and management studies (Tassabehji, 2003). Some see e-commerce adoption in terms of Internet applications, such as having an Internet connection, e-mail, intranet, and extranet (e.g., Mehrtens *et al.*, 2001; Quayle, 2002; Drew, 2003; Lawson *et al.*, 2003; Brown and Lockett, 2004). Some see e-commerce adoption in terms of the use of business activities, such as exchanging business information, buying and selling products, services or information, and delivering and marketing via Internet applications (e.g., Raymond, 2001; Daniel and Wilson, 2002; Daniel *et al.*, 2002; Daniel, 2003; Lertwongsatien and Wongpinunwatana, 2003; Rao *et al.*, 2003). Others regard e-commerce adoption as the mix of Internet applications and business activities (e.g., Kendall *et al.*, 2001; Beveren and Thomson, 2002; Scupola, 2002; 2003; Fillis *et al.*, 2004).

Drew (2003), for example, investigated e-commerce adoption by firms in the East of England by looking at the strategic uses of e-commerce in terms of three

Internet applications: having an email, websites, and intranet. Brown and Lockett (2004) investigate the emergence of, and potential for, e-commerce applications. They proposed e-commerce adoption in terms of classification of e-commerce applications based on the complexity of the applications, ranging from very low complexities, such as email, websites, intranet, and extranet, to very high complexities, such as financial applications, e-marketplaces, electronic-customer relationship management (eCRM), and emerging platforms. In line with Drew (2003) and Brown and Lockett (2004), Rao *et al.* (2003) suggested the development of e-commerce adoption in firms in terms of the Internet applications. They proposed that e-commerce includes having a web presence on the Internet, having web portals, transactions integration (which involve online ordering and online payment), and enterprises integration (businesses with supply chain management (SCM) integration). To view e-commerce usages as technology *per se* seems less relevant because there are many business activities there are going on in e-commerce.

Other researchers, on the other hand, investigate e-commerce usages in terms of mixing business activities. Kendall *et al.* (2001), for example, investigated e-commerce adoption in SMEs in Singapore in terms of business activities, such as, seeking information, buying online, and selling items online; and Internet applications, such as e-mail. Beveren and Thomson (2002) also investigated the usage of e-commerce in Australian SMEs by mixing such e-commerce usages as e-mail, websites, advertising online, and online ordering. The mix approach tends to become muddled up as it is not clear which business activities can occur in which Internet applications. For instance, advertising and ordering online do not necessarily occur only via websites; they could also occur via e-mail.

The most common approach to e-commerce adoption is using a set of business activities to view e-commerce (e.g., Poon and Swatman, 1999; Raymond, 2001; Daniel and Wilson, 2002; Daniel *et al.*, 2002; Le and Koh, 2002; Scupola, 2002; Yeung *et al.*, 2003; Grandon and Pearson, 2004). These studies show that there is a wide range of business activities in which organisations make use of e-commerce. Among e-commerce activities investigated are the use of e-mails for

communication with customers and suppliers, having a website for online ordering and online payment, and also the online buying. Appendix I to this thesis, which has been derived from existing literature, provides a summary of the activities for which firms are currently using to conduct e-commerce. Many of these activities are directed towards customers, either current or potential. Some of the activities also involve suppliers and other stakeholders.

The above discussion shows that there are many e-commerce activities that researchers use to examine e-commerce adoption in organisations. Regardless of the kind of e-commerce activities or technologies firms are adopting, whether communicating with customers, or displaying product and service information, or any other more complicated websites such as those with customer relationship management (CRM) or supply chain management (SCM), there are just three basic components of e-commerce. These three e-commerce components are e-mail, online buying, and websites (for online selling of products and services). These three components have been used by many other e-commerce studies to describe e-commerce adoption by firms (e.g., Kendall *et al.*, 2001; Daniel *et al.*, 2002; Fillis *et al.*, 2004; Grandon and Pearson, 2004; Pool *et al.*, 2006). Indeed, analysis from Appendix I also reveal that these are the three general e-commerce components that are usually used to demonstrate the prevalence of e-commerce.

In line with Daniel *et al.* (2002), Fillis *et al.* (2004), Grandon and Pearson, (2004), Pool *et al.* (2006), this study will also use these three types of e-commerce components to measure e-commerce adoption among SMEs. Using these three types of e-commerce components will allow researchers to understand what types of e-commerce components usually used by SMEs in Malaysia and to what extent they have used them. In addition to recording the existence of such technologies in the SMEs, this research also investigates and scrutinises the actual use of e-commerce in an SME by looking at the business activities for which SME use e-commerce (the details of these business activities will be presented in Section 3.2.4).

3.2.3.1 E-commerce Adoption by SMEs

SMEs have traditionally restricted their activities to local economies and face-to-face interaction. However, over the last decade, there has been an increasing participation of SMEs in e-commerce; particularly with the commercial use of the Internet. A number of businesses have taken advantage of the potential benefits that the Internet and e-commerce offers. There are suggestions that SMEs can gain considerably from using the Internet (Poon and Jevons, 1997; Daniel and Wilson, 2002; Daniel, 2003; Martin and Matlay, 2003). There are also suggestions that SMEs can compete with large organisations by adopting e-commerce, because the Internet can provide equal access to both. The Internet enables SMEs to make as great an impact on their customers as it does on large organisations (Riquelme, 2002). Some SMEs have started to market their products and services online and some have started to move into the international market using the Internet's capabilities. Despite these enthusiasms, a significant number of SMEs have yet to adopt e-commerce; particularly involving websites with online transactions. Indeed, some studies show that the number of SMEs that trade online is decreasing (Brown and Lockett, 2004; Pool *et al.*, 2006).

3.2.3.2 E-commerce Adoption by Malaysian SMEs

Several studies of e-commerce adoption by SMEs in Malaysia have been found in literature. Of these, most focus on examining the awareness and readiness of Malaysian firms in general. For example, Sulaiman (2000) investigated the status of e-commerce applications in Malaysian firms. Though many Malaysian firms have Internet access, most limited its usage to e-mail (Sulaiman, 2000). Other studies investigated the e-commerce of successful firms (e.g., Albert *et al.*, 2002), drivers of, and barriers to, e-commerce in Malaysia (Paynter and Lim, 2001), e-commerce in specific industries, such as shipping (Ang *et al.*, 2003), and e-commerce in manufacturing firms (Bolongkikit *et al.*, 2006). These studies concluded that e-commerce usage by SMEs is still in its infancy. Indeed, many firms, especially SMEs, are reluctant to go online (Karkoviata, 2001).

A study by Le and Koh (2002) found that out of 240 small and large firms with websites, only 171 could be contacted from their website via e-mail. Of these

171 firms, only 42 responded and only 12 considered e-commerce significant for their businesses. In contrast, a study by a Malaysian ICT consultancy firm (IDC⁶, 2005), reported that 86% of firms in Malaysia have websites and 17% of SMEs are active in an e-marketplace (IDC, 2005). *The Star*, a prominent newspaper in Malaysia, recently reported that only 30% of SMEs in Malaysia have websites and most of these are never updated (*Star Online*, 2005).

In addition, Adham and Ahmad (2005) investigated the adoption rates of website and e-commerce technologies by all 562 Malaysian public firms (reputable SMEs and large firms, as listed on the Bursa Malaysia). Their study only examined the firm's website for operability and whether they incorporated e-commerce systems for online transactions. They looked at how firms used websites to sell online to their customers. Only 62% of the websites were operable, with 96% only providing firm and product information, and only 4% were equipped for e-commerce transactions (Adham and Ahmad, 2005). Their findings revealed that even well-known firms in Malaysia, with excellent track records, had yet to use online transactions to sell their goods and services to their customers. Even so, the authors concluded that these firms must adopt e-commerce and trade online, in order to be competitive in the market.

The above discussion shows that there are very limited studies on e-commerce adoption among SMEs in Malaysia. As such, related studies of e-commerce adoption among SMEs in developed nations, such as the United Kingdom and the United States of America, will be used as a basis for this study. The following section discusses issues regarding e-commerce and SMEs, such as e-commerce activities adopted by SMEs, facilitators and inhibitors, reasons for e-commerce adoption and its benefits, and government e-commerce policies.

3.2.4 E-commerce Activities Adopted by SMEs

There are several ways that researchers investigate the intensity of e-commerce usage among SMEs. First, some researchers look at e-commerce usages in terms of stages. Daniel *et al.* (2002), for example, claimed that SMEs in the UK are

⁶ Malaysian IDC firm - a US-based international firm that has a branch in Malaysia.

adopting e-commerce in linear stages. Using the taxonomy of Grimshaw *et al.* (2002), they identified e-commerce adoption by SMEs in four stages: (1) developers, (2) communicators, (3) web presence and (4) transactors. Developers are developing their first e-mail communication with customers and suppliers and providing information via websites. Communicators are using e-mail to communicate with customers, suppliers and employees, and exchanging documents and designs electronically with customers and suppliers. Web presence means websites and on-line ordering facilities. Transactors are those with on-line ordering in operation and payment capabilities. In the same vein, Rao *et al.* (2003) also investigated the development of e-commerce in terms of a stage approach. They conclude that SMEs developed e-commerce in four stages starting from having a web presence on the Internet, followed by web portals, transaction integration and enterprise integration. However, the stage approach which implies that businesses adopt more complex e-commerce according to stages has been criticised – as not all SMEs go through stages (Fillis *et al.*, 2004). Some companies remain at the same stage throughout their lifetime, while others, with leading edge technology may progress rapidly through various stages and not necessarily through the proposed sequential manner. Firms can leapfrog many of the accepted stages (Bell, 1995).

Other researchers are concerned simply with whether firms adopt or do not adopt e-commerce – assuming e-commerce as an aggregate or a single solution (e.g., Grandon and Pearson, 2004; MacGregor and Vrazalic, 2007). Grandon and Pearson (2004), for example, investigated e-commerce adoption among 100 SMEs in the United States by asking them whether they used or did not use e-commerce. They found that 64% of SMEs in their study have adopted e-commerce regardless of whether they have ever bought or sold online. MacGregor and Vrazalic (2007) looked at e-commerce adoption by SMEs in three countries, namely Sweden, Australia, and the United States. They concluded that SMEs in Sweden have the highest rate of e-commerce adoption, followed by SMEs in the United States and Australia. In line with Grandon and Pearson (2004), MacGregor and Vrazalic's (2007) study also investigated e-commerce adoption intensity among SMEs using e-commerce as a single

solution. Given the complexity of e-commerce and the difficulty of implementing it in an organisation, it is difficult to view e-commerce as an aggregate or a single solution because not all SMEs adopt the same e-commerce intensity (Pool *et al.*, 2006). SMEs that have websites to only display information about their products and services do not necessarily have websites for online transactions. SMEs that buy online do not necessarily have websites to sell online. Even if qualitative scales can be used to measure e-commerce adoption intensity, according to Ordanini (2006), this can be done among users only. It is doubtful that adoption and intensity, which are two different phenomena, can be measured on the same qualitative instrument (Ordanini, 2006). Thus, treating e-commerce as an aggregate or a single solution is not appropriate for this study.

Another way of investigating the intensity of e-commerce usage among SMEs is by looking at e-commerce as a set of Internet applications (e.g., Drew, 2003; Brown and Lockett, 2004). Drew (2003), for example, investigated the uses of e-commerce by SMEs in the east of England in terms of three types of Internet applications: e-mail, intranets, and websites. He found that most of the SMEs in his study used e-mail to communicate, intranets for internal communication, and websites for advertising and promotion. Brown and Lockett (2004) found that SMEs generally engage in only simple e-commerce activities, such as e-mail, web access, and websites. Few SMEs used complex e-commerce activities, such as customer relationship management (CRM) or supply chain management (SCM) (Brown and Lockett, 2004). To view e-commerce as a set of Internet applications seems flawed. E-commerce adoption is not a mere technology choice, but is a means to change how business processes are managed (Wu *et al.*, 2003). The technology analysis will not be the solution itself, but the set of business processes involved, particularly when the focus is on the world of SMEs (Wu *et al.*, 2003). Hence, to treat e-commerce as a set of Internet applications is also not appropriate for the purposes of this study.

The most common way to investigate the intensity of e-commerce usage, particularly among SME managers, is in terms of a set of business activities carried out on the Internet. Among the business activities investigated include

how SME managers used e-mail and intranets to communicate and exchange documents electronically with customers and suppliers (Daniel *et al.*, 2002; Drew, 2003; Brown and Lockett, 2004), web access (Mehrtens *et al.*, 2001; Brown and Lockett, 2004), and websites for providing information, advertising and promotion, online ordering and online payment capabilities (Daniel *et al.*, 2002; Drew, 2003). Some researchers investigated how firms buy online (Daniel and Grimshaw, 2002; Quayle, 2002), while others looked at the more complex website applications, such as supply chain management (SCM) or customer relationship management (CRM) (Brown and Lockett, 2004; Beck *et al.*, 2005; Pool *et al.*, 2006). Table 3.2 reports the current state of implementation, classifying the types of e-commerce adopted based on the three types of e-commerce components discussed in the previous section, and commenting on the sectors that have implemented them.

Table 3.2: Previous research on adoption of e-commerce in SMEs

Author	Firms studied	Overall e-commerce adopters	E-mail	Website (for online selling)	Online buying	Sectors with highest e-commerce adoption rates
Poon and Joseph (2000)	67 SMEs in Australia	All are e-commerce adopters	Use different classification	Not applicable	Not applicable	Business and Professional sector
Kendall <i>et al.</i> (2001)	58 Singapore SMEs	Use different classification	Have e-mail - 91%	Have website - 55% Sell online - 24%	Buy online - 28%	IT firms
Raymond (2001)	54 SMEs in Canada	63% have adopted e-commerce	Use different classification	Not applicable	Not applicable	Travel agencies
Beveren and Thomson (2002)	179 SMEs manufacturers in Victoria, Australia	Use different classification	Have e-mail - 42%	Have website - 19% Online ordering - 10%	Buy online - 2%	Not applicable
Daniel <i>et al.</i> (2002)	678 UK SMEs	Use different classification	Communication with customer/suppliers - 90% Internal communication - 65% Communication with investors/shareholders - 11%	Have website - 69% Online ordering - 28% Online payment - 11%	Buy online - 11%	Professional Services
Quayle (2002)	298 UK SMEs	34% have adopted e-commerce	Use different classification	Have website - 54%	Buy online - 34%	Manufacturing
Lertwongsatien and Wongpinunwatana (2003)	386 Thailand SMEs	28% have adopted e-commerce	Have e-mail - 28%	Have website - 28%	Not applicable	Not applicable
Scupola (2003)	7 SMEs in Italy	All are e-commerce adopters	Not applicable	Have website - 70% Online ordering - 14% Online payment - 0%	Not applicable	Not applicable

Author	Firms studied	Overall e-commerce adopters	E-mail	Website (for online selling)	Online buying	Sectors with highest e-commerce adoption rates
Grandon and Pearson (2004)	100 US SMEs	64% have adopted e-commerce	Not applicable	Have website - 85%	Not applicable	Retail
Teo and Ranganathan (2004)	108 Singapore firms	53% have adopted e-commerce	Use different classification	Not applicable	Not applicable	Services
Adham and Ahmad (2005)	562 Malaysian public firm websites	62% have adopted e-commerce	Not applicable	Have website - 60%	Buy online - 3%	Financial sectors
Ordanini (2006)	700 SMEs in Italy	Use different classification (website, e-CRM, e-pocurement)	Not applicable	Have website - 66%	Not applicable	Retail sectors
Beck <i>et al.</i> (2005)	151 SMEs: Denmark - 33 firms Germany - 34 firms France - 31 firms US - 53 firms	Use different classification (e-mail, website, intranet, extranet, EDI, EFT and call centres)	Have e-mail - Denmark - 100%, France - 94%, Germany - 100%, and US - 98%	Have website - Denmark - 91%, France - 62%, Germany - 91% US - 84% Online sales Denmark - 31%, France - 9%, Germany - 27%, US - 26%	Buy online - Denmark - 73%, France - 23%, Germany - 74%, US - 70%	Wholesale and retail sectors
MacGregor and Vrazalic (2007)	313 Sweden SMEs, 160 Australian SMEs and 150 US SMEs	Sweden - 58.5% Australia - 15.6% US - 54.3% have adopted e-commerce	Not applicable	Not applicable	Not applicable	Sweden- Industrial and service sectors Australia - Service and retail US- Industrial and retail

The results of these studies on rates and patterns of e-commerce adoption give some idea of the sectors that have been most progressive in e-commerce adoption, and the types of e-commerce that have been most frequently adopted by businesses, especially SMEs. Most studies focused on the retail and service sectors. Other studies looked at the manufacturing sector, and very few studies investigate both services and manufacturing sectors, particularly in Malaysia.

Table 3.2 also displays that e-mail is one of the e-commerce components adopted by most SMEs, mainly to communicate with customers and suppliers. However, there is different websites adoption intensity. Some SMEs have websites with just information about their firms - online brochureware (Laudon and Traver, 2002), some SMEs' websites have information about their firms, products and services - online catalogue (Raymond, 2003), while very few SMEs have websites with the more complex activities, such as websites with online ordering or online payment. Although online buying is very rare in e-commerce and SMEs studies, some researchers, such as Daniel *et al.* (2002), Book *et al.* (2005) and Pool *et al.* (2006), investigated the used of online buying their studies. Part of the reasons is because the definitions of e-commerce used in these studies include buying and selling.

This study adopted Laudon and Traver (2002), Pool *et al.* (2006), and MacGregor and Vrazalic (2007) e-commerce definition, which has been adapted from Zwass first e-commerce definition. Hence, this study will include business activities that will be carried out in three e-commerce components, namely e-mail, online buying, and website (to indicate online selling). Laudon and Traver (2002) listed types of business activities that occurred on the Internet according to the e-commerce components. For example, communicating with customers and suppliers, and accepting customer orders can be carried out via e-mail; online brochureware and online catalogues occurred in websites; and online buying involved ordered or paid online from other firm's website. The discussion of the business activities occurred in three types of e-commerce components is presented below.

3.2.4.1 E-mail

The e-mail has been widely used in previous studies to describe the extent of e-commerce usage in firms (Daniel *et al.*, 2003; Karakaya and Khalil, 2004; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007). Daniel *et al.* (2003) for example, investigated e-commerce adoption among SMEs in the UK. They found that many SMEs used e-mail not only to communicate with their customers and suppliers, but also to communicate with their employees. Seyal and Rahman (2003) found that most SMEs in their study used e-mail as a platform to sell online. Raymond (2004), on the other hand, found that SMEs not only used e-mail to communicate, but also to exchange business documents with their suppliers or send leaflets to their customers. Other researchers reported that many SMEs used e-mails in their businesses, and suggested that these SMEs were progressing to the next stage of e-commerce, which is the stage where SMEs have their own websites (Kendall *et al.*, 2001; Scupola, 2003; MacGregor and Vrazalic, 2007).

3.2.4.2 Website for Online Selling

Selling and buying are two common components to describe e-commerce. However, selling and buying have two different facets since they cater to two different niches. Selling is more towards 'customer-focus', which is *to sell goods and services to customers*, whereas buying is the activities that relates *to the purchase of goods or services from suppliers* (Daniel and Wilson, 2002). Sellers tend to focus on displaying and surrendering the item, and selling prices are hence more heavily influenced by activities such as how to make the item sellable (Carmon and Ariely, 2000). A firm which sells online through its website does not need to disclose any financial details. However, it needs to invest in a website, not only for displaying firm's information, products and services, but also to invest in website activities such as online security (Houghton and Winklhofer, 2004).

Researchers have investigated various website activities (e.g., Daniel *et al.*, 2003; Raymond, 2001; MacGregor and Vrazalic, 2007). Among those investigated are simple website activities such as online brochureware and online catalogue (with

and without prices) (Daniel *et al.*, 2003; Pool *et al.*, 2006), or more complex website activities, such as website with customer relationship management and supply chain management facilities (Brown and Lockett, 2004). Website with online brochureware, online catalogue online inquiries, online ordering, and online payment will be used in this study to examine the extent of website usage among SMEs in Malaysia. More complex website activities are not included because they were rarely used by SMEs (Brown and Lockett, 2004; Pool *et al.*, 2006). Below are the explanations for these activities.

Online brochure

Online brochure or brochureware is a website activity that distributes static company information in one-way broadcasting fashion (Le and Koh, 2002). Through online brochure, firms can market themselves by displaying company information on the website (Raymond, 2001; Daniel *et al.*, 2002; Daniel, 2003). Teo and Tan (1998) found that one of the objectives of firms with e-commerce is to provide information about their companies to customers. This activity is usually considered as the first level of usage of e-commerce (Teo and Yujun, 2003, Daniel *et al.*, 2002).

Online catalogue

Another way a firm can market itself is by having an online catalogue, where a range of products and services is displayed on their websites (Teo and Tan, 1998; Raymond, 2001; Le and Koh, 2002). This activity is helpful in providing customers and potential customers with information about a firm's products and services, news and also company events, at no cost (Teo and Yujun, 2003). Empirically, researchers found that many firms use e-commerce, at a start, by displaying information about their firm, and products and services on their websites (Daniel *et al.*, 2003; Scupola, 2003; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007).

Online enquiries

Firms can also provide information about their companies, and their products and services to customers and potential customers by providing a link or an option on

the firm's website to enable customers to inquire for information (Ghosh, 1998). This facility allows inquiries to be sent directly to the firm by clicking a button or a link on the firm's websites. This activity is called a website with online inquiries or online forms (Daniel, 2003; Seyal and Abd Rahman, 2003; Teo and Ranganathan, 2004).

Online ordering

Online ordering is an activity that allows customers to order any products or services online (Daniel *et al.*, 2003; Laudon and Laudon, 2007). An order form/page is posted on the website to indicate the seller's intention to sell items online (Poon, 2000; Kendall *et al.*, 2001; Daniel *et al.*, 2002; Lewis and Cockrill, 2002; Daniel, 2003; Scupola, 2003). Customers need only to fill in the order form and click the send button on the website to place their orders. Online ordering is considered as one of the common communication facilities on a website (Katz and Safranski, 2003).

Online payment

Online payment is another website activity. Many firms are advised to make online payment available on their websites so that customers can order and finally pay online (Raymond, 2001; Daniel and Grimshaw, 2002). However, having a website with online payment requires additional considerations. Firms need to make sure their online payment system is secured; thus, they need to invest on online security. As a result, only a scant number of SMEs have online payment facility on their websites because of the additional cost incurred for this security (Scupola, 2003; Pool *et al.*, 2006).

Although there are many other complex website activities beyond online payment, such as website with SCM and CRM, they are not included in this study because there are very few SMEs that have complex activities installed on their websites (Bell *et al.*, 2001; Brown and Lockett, 2004). In the UK for example, because the rate of adoption of online ordering and payment is so slow among SMEs, the UK government has not even tried to measure engagement of SMEs in more complex applications (Brown and Lockett, 2004). This also

happens in other countries where very few SMEs have more complex activities installed on their firms' websites (Daniel *et al.*, 2003; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007).

3.2.4.3 Online Buying

Another e-commerce component is online buying. As stated earlier, online buying is different from online selling. Buyers tend to focus on what they spent to buy items; and buying prices are thus heavily influenced by variables such as salient reference prices (Carmon and Ariely, 2000). Contrary to online selling which requires a firm to have a website; in online buying, buyers do not need to have their own website. They can buy anytime and anywhere online as long as they are connected to the Internet (Daniel *et al.*, 2003). However, buyers need to provide their financial details, such as personal and credit card information.

In the case of firms buying online from their suppliers, many researchers and practitioners suggest that firms should use EDI, WebEDI, or online procurement (Brown and Lockett, 2004). However, many SMEs are reluctant to use EDI, WebEDI, or online procurement (Erridge *et al.*, 1998; Mira da Silva, 2003) because of the huge investment costs and complexity involved in the adoption of the system (Erridge *et al.*, 1998; Mira da Silva, 2003). Mira da Silva (2003) found that EDI will mainly benefit large organisations, while smaller firms will only get minimal benefits. This situation is also evident in other countries, especially developing countries such as Malaysia (Ang *et al.*, 2003; Thi, 2007). For this reason, EDI or WebEDI will not be included in this study.

Although EDI or WebEDI e-commerce is not included in this study, it must be noted that some online buying do take place between SME managers and their suppliers. For example, Scupola (2003) found that some managers bought directly from other firms through websites, particularly if the items were in small amounts or the items are not available locally. Kendall *et al.* (2001) also found that managers bought online from other firms' websites. Indeed, many other researchers also include online buying in their studies of e-commerce adoption

among firms, including the studies by Daniel *et al.* (2003), Grandon and Pearson (2004), Pool *et al.* (2006), and MacGregor and Vrazalic, (2007).

3.2.5 Facilitators of E-commerce Adoption

As stated earlier, e-commerce over the Internet is a new way of doing business (Tassabehji, 2003; Turban *et al.*, 2003; Chuang *et al.*, 2007; MacGregor and Vrazalic, 2007). It is a new phenomenon, especially in the business and management era. Thus, there are rarely any solid theories to explain e-commerce adoption, particularly among firms (Scupola, 2003). However, because e-commerce involves ICT, most researchers in this area have used technology and innovation theories to investigate its adoption among firms, particularly in finding the potential variables affecting the choice to adopt e-commerce. In line with this view, e-commerce adoption processes will be investigated using some basic reference models, which have been developed in the broad literature of technology adoption/diffusion.

There are quite a number of theories used and models developed in IT research (Wade, 2009). Among those, a few models stand out, for example, Roger's (1962, 1983, 1995) diffusion of innovation theory (DOI), Davis' (1989) technology acceptance model (TAM), Tornatzky and Fleischer's (1990) technological-organisational-environmental model (TOE), and Azjen's (1991) theory of planned behaviour (TPB). Most of these models focus on the secondary traits of the innovation processes, namely on those subjective features in the mind of the decision maker (Moore and Benbasat, 1991; Ordanini, 2006). Two models, TAM and TPB, focus mainly on user acceptance to analyse automation processes in the early phases of IT diffusion (Ordanini, 2006). On the other hand, DOI and TOE models are more suitable and powerful to understand the predictors of technology adoption by organisations (Zhu *et al.*, 2003; Oliveira and Martins, 2011), and most studies on IT adoption at the firm level are derived from theories such as these two (Chong *et al.*, 2009). Thus, the next section will discuss these two models in more details.

3.2.5.1 Diffusion of Innovation (DOI) Theory

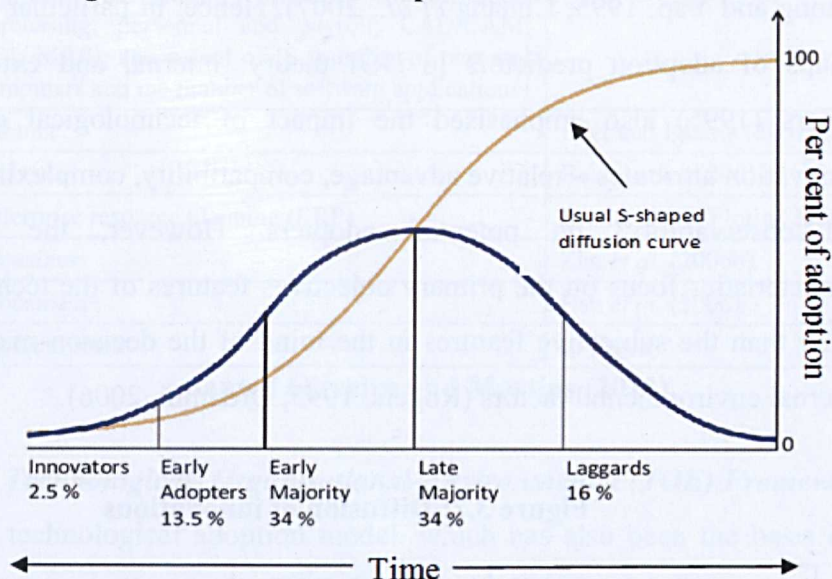
Diffusion innovation theory (DOI) comes from the work of Everett Rogers (1995) and is often used to explain ICT adoption (e.g., Thong and Yap, 1995; Kendall *et al.*, 2001). Rogers' DOI focuses on the spread of innovation (ideas, processes, and technologies) over a time among the members of a social system (Rogers, 1995). The members of the social systems are the adopters, which can be an individual, a group, or an organisation (Rogers, 1995). Among Rogers' concepts of diffusion include the adopter categories, S-shaped curve, and the adoption predictors.

According to Rogers (1995, p. 263-279), there are five categories of adopters in DOI theory: (1) innovators – the first individuals to adopt an innovation. They are usually young, willing to take risks, have great financial fluidity, are very social and have the closest contact with scientific sources and interaction with other innovators; (2) early adopters - the second category of individuals to adopt an innovation. The characteristics of these are similar to those of the innovators; (3) early majority - individuals in this category adopt an innovation after a varying degree of time, but it is significantly longer than the innovators and early adopters. People in this category usually have above average social status and have contact with early adopters; (4) late majority - individuals in this category will adopt an innovation with a high degree of scepticism and after the majority of society has already adopted the innovation. They usually have below average social status and very little financial fluidity; and (5) laggards - individuals in this category are the last to adopt an innovation. People in this category tend to focus on traditions, have lowest social status, lowest financial fluidity, and are the oldest of all the adopters.

Rogers (1982) advocated that innovation usually follow a normal, bell-shaped curve when plotted over time on a frequency basis of adopters (Rogers, 1995). If a cumulative number of adopters is plotted, the result is an S-shaped curve (see Figure 3.1). According to Rogers (1995), the S-shaped adopter distribution rises slowly at first when there are a few adopters in each time period, then accelerates to a maximum until half of the individuals in the system have adopted, and

finally, the curve increases gradually at a slower rate as fewer remaining individuals adopt the ideas, processes, and technologies (Rogers, 1995).

Figure 3.1: The rate of adoption for a usual innovation



Source: Adapted from Rogers (1995, p. 314)

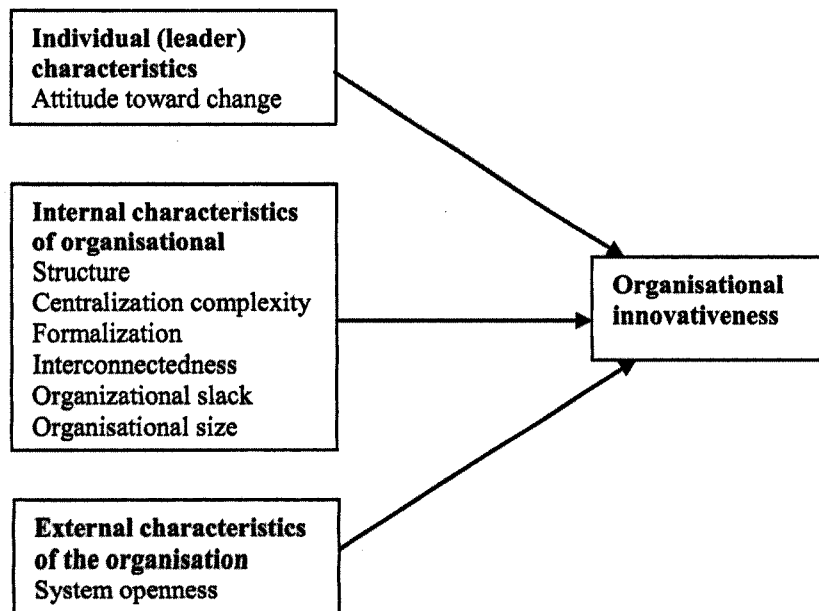
Note: The diffusion of innovations according to Rogers. With successive groups of consumers adopting the new technology (shown in blue), its market share (yellow) will eventually reach the saturation level.

Rogers' DOI adopter categories and diffusion curve have been scrutinised by many IT researchers (e.g., De Marez and Verleye, 2004; Chen *et al.*, 2008). De Marez and Verleye (2004) claimed that the adoption categories do not represent the diffusion pattern of fast growing technology such as the Internet and e-commerce. Innovations often fail to cross the tipping point from the innovators and early adopters to reach the early majority (De Marez and Verleye, 2004). High technology, such as the Internet and e-commerce are often superseded before they can get far along Roger's diffusion curve (Chen *et al.*, 2008).

The DOI theory is also widely used to find adoption predictors of IT diffusion in organisations (Kimberly and Evansiko, 1981; Van de Ven, 1986; Clark and Stauton, 1994; Premkumar and Robert, 1998; Kendall *et al.*, 2001). According to Rogers (1995), there are three groups of adoption predictors: individual (leader) characteristics (individual innovativeness), internal factors which consist of firm characteristics (business size, business age, available resources, organisational slack, and the manner how ICT is used and managed), and external factors of the

organisation (system openness) (see Figure 3.2). However, research has shown that individual characteristics belong to the internal factors of the organisational, particularly when dealing with the adoption of technology among organisations (Thong and Yap, 1995; Chuang *et al.*, 2007). Hence, in particular there are two groups of adoption predictors in DOI theory: internal and external factors. Rogers (1995) also emphasised the impact of technological characteristics (innovation attributes – relative advantage, compatibility, complexity, trialability, and observability) on potential adopters. However, the technological characteristics focus on the primary objectives features of the technology itself, rather than the subjective features in the mind of the decision maker or on the external environmental factors (Rogers, 1995; Ordanini, 2006).

Figure 3.2: Diffusion of innovations



Adopted from Rogers (1995, p.55)

Since the early applications of DOI to IS research, the theory has been applied and adapted in various ways. Some examples are presented in Table 3.3.

Table 3.3: Selected studies based on DOI framework (Rogers 1995)

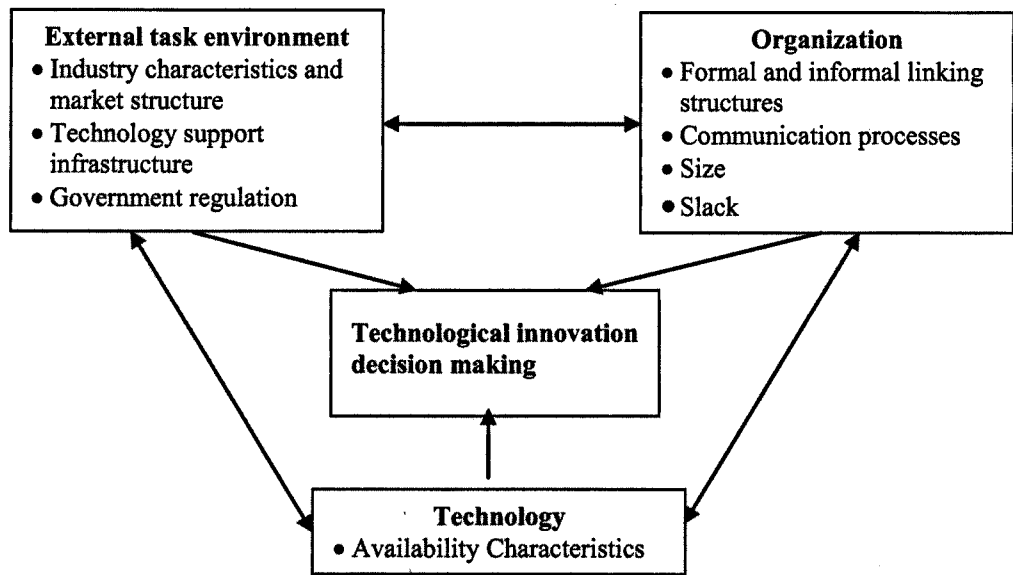
IT Adoption	Author(s)
Material requirements planning (MRP)	Cooper and Zmud (1990)
IS adoption (uses at least one major software application: accounting; inventory control; sales; purchasing; personnel and payroll; CAD/CAM; EDI; MRP), and extent of IS (number of personal computers and the number of software applications)	Thong (1999)
Intranet	Eder and Igarria (2001)
Web site	Beatty <i>et al.</i> (2001)
Enterprise resource planning (ERP)	Bradford and Florin (2003)
E-business	Zhu <i>et al.</i> (2006b)
E-business	Hsu <i>et al.</i> (2006)
E-procurement	Li (2008)

Adapted Oliveira and Martins (2011)

3.2.5.2 Technological- Organisational-Environmental (TOE) Framework

Another technological adoption model, which has also been the basis of many ICT adoption studies, is the TOE framework. This model discusses mainly the predictors of ICT diffusion and was brought up by Tornatzky and Fleischer (1990). In this model, Tornatzky and Fleischer (1990) identified three factors that influence a firm to adopt and implement technological innovation: technological, organisational, and environmental factors (see Figure 3.3). The technological factor describes both the existing technologies in use and new technologies relevant to the firm in terms of required skills, infrastructure, complexity, and ease of use (Tornatzky and Fleischer, 1990). The organisational factor is defined in terms of several descriptive measures about the organisation such as scope, size, and the amount of slack resources available internally, its organisational structure, and complexity of its managerial structure (Tornatzky and Fleischer, 1990). The environmental factor is the arena in which a firm conducts its business, such as its industry, competitors, access to resources supplied by others and dealings with government (Tornatzky and Fleischer, 1990). It presents both the constraints and opportunities for technological innovation (Scupola, 2003).

Figure 3.3: Technology-organisation- environment framework



Adopted Tornatzky and Fleischer (1990, p.40)

The TOE framework has been adapted in many IT adoption studies. It provides a useful analytical framework that can be employed when studying the adoption and assimilation of different types of IT innovation (e.g., Scupola, 2003; Chuang *et al.*, 2007). Some examples of studies that have used TOE framework are presented in Table 3.4. Some specific factors were identified within the three contexts; however, they vary across different studies.

Table 3.4: Selected studies based on TOE framework Tornatzky and Fleischer (1995)

IT adoption	Analysed variable	Author(s)
Open systems	<p>Characteristics of the “Open Systems Technology”: perceived benefits; perceived barriers; perceived importance of compliance to standards, interoperability, and interconnectivity</p> <p>Organisational context: complexity of IT infrastructure; satisfaction with existing systems; formalization of system development and management.</p> <p>External environment: market uncertainty</p>	Chau and Tam (1997)
E-business	<p>Technology competence: IT infrastructure; e-business know-how</p> <p>Organisational context: firm scope, firm size</p> <p>Environmental context: consumer readiness; competitive pressure; lack of trading partner readiness</p>	Zhu <i>et al.</i> (2003)

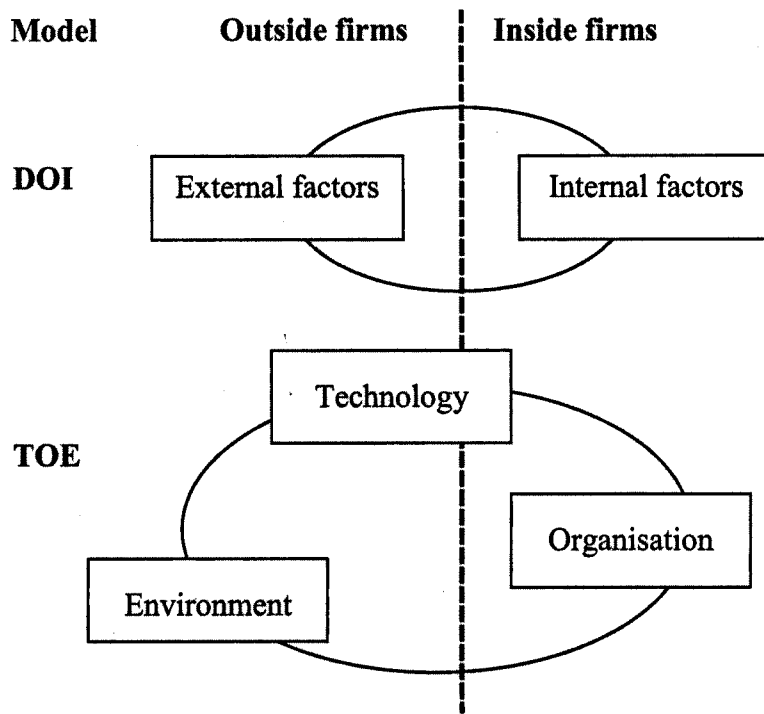
E-Business usage	<p>Technological context: technology competence, e-business front-end functionality and back-end integration.</p> <p>Organisational context: size; international scope; financial commitment.</p> <p>Environmental context: competitive pressure; regulatory support</p>	Zhu and Kraemer (2005)
E-commerce development level	<p>Technological context: support from technology; human capital; potential support from technology</p> <p>Organisational context: management level for information; firm size.</p> <p>Environmental context: user satisfaction; e-commerce security</p>	Liu (2008)
Internet Web site E-commerce	<p>Technological context: technology readiness; technology integration; security applications.</p> <p>Organisational context: perceived benefits of electronic correspondence; IT training programmes; access to the IT system of the firm; Internet and e-mail norms.</p> <p>Environmental context: competitive pressure</p>	Martins and Oliveira (2008)
E-business	<p>Technological context: technology readiness; technology integration; security applications.</p> <p>Organisational context: perceived benefits of electronic correspondence; IT training programmes; access to the IT system of the firm; Internet and e-mail norms.</p> <p>Environmental context: web site competitive pressure</p>	Oliveira and Martins (2010)

Adapted Oliveira and Martins (2011)

Both the DOI theory and the TOE framework, which focus on predictors of ICT adoption have been scrutinised by various ICT studies (e.g., Kuan and Chau, 2001; Zhu *et al.*, 2003; Xu *et al.*, 2005), in which the DOI theory is proven to be consistent with TOE framework (Kuan and Chau, 2001; Zhu *et al.*, 2003; Oliveira and Martin, 2011). In DOI, Rogers (1995) emphasised individual characteristics, and both the internal and external characteristics of the organisation, as drivers for organisational innovativeness. Both the individual and internal characteristics are consistent with the technology and organisation context of the TOE framework. In addition, the TOE framework also includes more detailed information on DOI external characteristics, including a new and important component, which is the environmental context (Oliveira and Martins, 2011). Many researchers combine some predictors in DOI with the predictors in TOE framework or use them interchangeably, to capture the additional complexity and variance in the phenomena of technology adoption, and to

explain firm innovation diffusion (e.g., Kuan and Chau, 2001; Scupola, 2003; Zhu *et al.*, 2003; Xu *et al.*, 2005; Hsu *et al.*, 2006; Ordanini, 2006; Chuang *et al.*, 2007; Zhu *et al.*, 2006b). Figure 3.4 provides the representation of the two models in terms of firms' internal and external predictors.

Figure 3.4: DOI and TOE models: a graphical representation



Source: Adapted from Ordanini (2006)

As stated earlier, many studies combined the DOI theory's element predictors and the TOE framework's predictors to find the factors that facilitate ICT adoption. Thong and Yap (1995), for example, associated CEO characteristics from DOI to the TOE framework. They found CEO's innovativeness and CEO's IS, business size, employees' IS knowledge, and information intensity knowledge to be predictors of firms adoption of at least one major of software. Chong *et al.* (2009) added innovation attributes (relative advantage, compatibility, and complexity) from DOI and an additional new factor in the adoption study called information sharing as culture characteristics to the TOE framework. They found that expectations of market trends, competitive pressure, trust, information distribution, and information interpretation were important factors for firms to adopt collaborative commerce (c-commerce). Others studies included Zhu *et al.* (2006a) who combined relative advantage, compatibility, cost, and security

concern from DOI with the TOE framework, whilst Wang *et al.* (2010) added relative advantage, complexity, and compatibility from DOI to the TOE framework.

To summarise, the contextual factors influencing the diffusion of ICT that have been examined include the internal factors, such as the organisational characteristics (Raymond, 1985; Scupola, 2003; Seyal and Rahman, 2003; Teo and Tan, 1998) and managerial characteristics (Mirchandani and Motwani, 2001; Seyal and Rahman, 2003), the external factors, such as the environmental characteristics (Scupola, 2003), and technology characteristics (Mirchandani and Motwani, 2001; Scupola, 2003; Seyal and Rahman, 2003). While the findings of these studies improve the understanding about ICT adoption, the results of several studies are mixed. Ordanini (2006) argued that more than 20 items were found as relevant factors which facilitate ICT adoption among SMEs. However, to date, no consistent set of factors affecting the adoption of ICT, particularly e-commerce, has been found with a number of factors reported in some studies to be relevant, but not in others (Ordanini, 2006). These conflicting results clearly warrant further investigation.

Based on both DOI and TOE frameworks at firm level (Rogers, 1995; Tornatzky and Fleischer, 1992), e-commerce adoption among SMEs is related to the managerial and organisational characteristics, and the environmental characteristics of the organisation. The effects of the technological characteristics have been scrutinised by many researchers in studies of technology adoption. But, as stated previously, technological characteristics focus on the features of the technology itself (Rogers, 1995; Ordanini, 2006), which is not of interest in this study. Hence, the next section discusses the internal (organisational-related factors) and external factors (environmental-related factors) that facilitate the ICT adoption, namely the e-commerce adoption.

3.2.5.1 Internal factors – Organisation related factors

There are a number of internal factors found to influence e-commerce adoption among SMEs. These factors include formal and informal linking structures, organisational slack, and resources available to a firm (Looi, 2003; Ordanini,

2006). Past research indicates that demographical factors, such as gender and age (i.e. the characteristics of the manager), firm size, and firm age (the characteristics of the organisation), play important roles in the decision to adopt a new technology, including the adoption of Internet or e-commerce (Seyal and Rahman, 2003; Chuang *et al.*, 2007). In regards to organisational demography, there are at least two important reasons why it is important. First, the managerial characteristics are important because it implies the characteristics of a person who made the decision. It should be noted that among SMEs, ICT adoption decision is usually handled by a single person (CEO or the SME manager) who usually decides whether to adopt or not to adopt ICT (Rodriguez, 2005). Second, organisational characteristics are also important in deciding whether to employ e-commerce in SMEs because of the differences in several aspects between small and large firms. These include available resources, organisational structures, market focus, and the manner IT is used and managed in a particular firm (Pollard and Hayne, 1998). However, there is still very limited research on organisation demography in the extant literature, especially on e-commerce adoption by SMEs.

Managerial characteristics

It has been well acknowledged that research on SMEs must include an analysis of the owner/manager, because in many ways the owner/manager of SMEs is the organisation (Gartner *et al.*, 1992). The SME owner/manager may be the CEO or managing director, depending on the type of ownership of the firm (Rodriguez, 2005). In most family businesses, this owner/manager is often the founder of the firm. In smaller SMEs, the CEO, who is usually the owner of the business, performs several roles at the same time (Rodriguez, 2005) and tends to do much of the work himself/herself (Miller and Toulouse, 1986). Conversely, in larger SMEs, the CEO usually has more personal contacts with other key managers (Miller and Toulouse, 1986) and delegates work to them. As such, to frame reference and ease discussion, throughout this thesis, the CEO, or the managing director or the owner/manager will all be referred to as the SME manager.

The SME manager is much like a captain at the helm of a ship (Rodriguez, 2005), running the firm in a 'personalised' way, and not necessarily through a formal management structure (Storey, 1994). He or she (after this, he) fulfils different roles: as a main decision-maker, information gatekeeper, and the driving force of the firm (Macdonald and Williams, 1993). He also exerts a tremendous personal influence on the strategy and structure, as well as on the performance, of the firm (Miller and Toulouse, 1986; Storey, 1994). The SME manager is involved not only with day-to-day operations, but also with defining the short and medium-term strategy of the firm (Rodriguez, 2005). He plays a major role in a business and is the one who shapes the future of the business. For SMEs, the decision whether to adopt any technology is made by the decision maker of the firm, who is usually the SME manager. In adopting new technologies, such as e-commerce, the manager often provides the impetus for the initiation of projects (Premkumar and Roberts, 1999; Tarafdar and Vaidya, 2006).

The personal influence of the SME manager on the strategy and structure of a firm explains the interest of various research in examining the influence of managerial demographic characteristics such as the level of education, gender, and age (Mirchandani and Motwani, 2001; Seyal and Rahman, 2003; MacGregor and Vrazalic, 2007; Zhu *et al.*, 2006b) in the establishment of e-commerce. For example, there is a positive relationship between the level of education of SME managers and growth (Storey, 1994). Education can provide managers with the tools and knowledge they need to understand the world (Variyam and Kraybill, 1994). Managers with higher levels of education are more confident in dealing with customers and financial institutions (Storey, 1994). They can generate a wider range of creative solutions when faced with complex problems (Karami *et al.*, 2006). Further, Rodriguez (2005) found that SME managers with higher educational background to be more internationalised and more inclined to adopt e-commerce than those who have not had such education. Similarly, MacGregor and Vrazalic (2007) also found a significant relationship between managers' education level and e-commerce adoption. These results are consistent with Chuang *et al.*'s (2007) claims. According to Chuang *et al.* (2007), the impact of

education in e-commerce adoption can be twofold. First, the higher the education a manager obtains, the more likely he is to be exposed to new technologies and to understand the value of e-commerce. Secondly, the more education a manager obtains the more confidence he will have in e-commerce. This, too, may result in SME managers using more e-commerce.

In his study of internationalisation of SMEs in five countries, namely United Kingdom, Australia, Finland, France, and Mexico, Rodriguez (2005) found that managers who have lived abroad for a considerable period were more extrovert and assertive towards internationalisation than those who had not. Managers claimed living abroad as one of the most powerful and enduring intellectual experiences because they were exposed to new languages and ways of thinking, and acquired first-hand experience of other cultures (Rodriguez, 2005). With these experiences, managers may bring to the firm a willingness to learn and adapt. Many believe that the market places a premium on SME managers who can achieve success in more than one cultural setting (Schulz, 2001). E-commerce may be a tool for internationalisation of SMEs, however to this researcher's knowledge there is scant research conducted on how overseas experience affect the decision of e-commerce adoption in SMEs.

It has been suggested that the age of managers is related to firm performance in general, and to develop business strategies in particular (Karami *et al.*, 2006). It is also said that the firms run by younger managers are more successful than the firms run by older managers (Karami *et al.*, 2006). Young managers are expected to be better educated and possess more current technical knowledge (Bantel and Jackson, 1989). They are seen as ambitious and more concerned with the immediate trend (Karami *et al.*, 2006). Older managers are said to embrace newer technologies at a slower rate than younger managers who have the advantage of being exposed to technology during their educational years (Ramayah *et al.*, 2003). As flexibility decreases, rigidity and resistance to change increase (Wiersema and Bantel, 1992).

Gender and ethnic background are two other demographic characteristics that may influence ICT usage (Gefen and Straub, 1997; Teo and Lim, 2000; Chuang *et al.*, 2007). Previous studies found that gender has an influence on technology usage (Gefen and Straub, 1997; Teo and Lim, 2000; Ramayah *et al.*, 2003). Evidence shows that gender did affect the use of e-commerce (Sexton *et al.*, 2002), IT-related ethics (Panteli *et al.*, 1999), and IT satisfaction (Palvia and Palvia, 1999). Infact, Gefen and Straub (1997) note that women and men differ in their perceptions of technology; men feel more at ease with computers than women, and males tend to use the Internet more than females (Teo and Lim, 2000; Ramayah *et al.*, 2003). In contrast, other studies revealed that there is no relationship between gender and Internet adoption (Chuang *et al.*, 2007; MacGregor and Vrazalic, 2007; Shaw and Gant, 2002; Ono and Zavodny, 2003). Shaw and Gant (2002), for example, found that male managers used the Internet as much as female managers, whilst Ono and Zavodny (2003) found that female users spent as much time using the Internet as their male counterparts. Quite possibly, these latter studies signal that gender inequalities in Internet access and usage are vanishing as reported by Chuang *et al.* (2003).

There is very limited study on ethnicity of owners/managers and ICT adoption (Middleton and Byus, 2011). It was found that ethnic minority owners/managers tend to adopt and use ICT less than the majority ones (Flamm and Chaudhuri, 2007; Middleton and Byus, 2011). Middleton and Byus (2010) found that there to be a continuing digital divide on ICT adoption between Hispanic and Non-Hispanic SME owners/managers: the Non-Hispanic SME owners/managers adopted a wider range of ICTs than the Hispanic SME owners/managers. In Malaysia, ethnicity can be considered one of the common issues in the country as Malaysia is a multi-ethnic, multi-religion society composed of three major ethnic groups: Malay, Chinese and Indian (Lam, 2004). Malays account for more than 50% of the population in the country, followed by Chinese (almost 30%) and Indians (almost 10%) (Malaysia, 2010). Although the Malays are the largest proportion of the three ethnic groups, research shows that the Malays are still far behind the Chinese and Indian groups in terms of average monthly income (Saari *et al.*, 2010). So, the government is still continuing to address this income gap,

and it remains as one of the main agenda in government development programmes (Saari *et al.*, 2010). SME manager ethnicities in Malaysia may be a differentiation factor for e-commerce adoption among SMEs, however to this researcher's knowledge there is scant research conducted on how manager's ethnicity affect the decision of e-commerce adoption in SMEs.

Organisational characteristics

Research has also shown that technology adoption, such as e-commerce adoption, among SMEs is also very much shaped by firm characteristics (e.g., Tornatzky and Fleischer, 1993; Thong and Yap, 1995). Lange *et al.* (2000) suggested that organisational characteristics, such as size, type and nature of business are basic attributes affecting organisational innovation. In addition, Chuang *et al.* (2007) found firm size and firm age to be significant predictors of e-commerce adoption among SMEs. Some other SME characteristics that were used to investigate the intensity of e-commerce adoption include the sector, location, and resources of the firm (e.g., Seyal and Rahman, 2003; Zhu *et al.*, 2003; Chuang *et al.*, 2007).

Studies on SMEs and the Internet found that e-commerce adoption is related to the economic sectors to which SMEs belong (Jentzsch and Miniotas, 1999). Boyd *et al.* (2007) argued that SMEs in the service sector used more e-commerce than those in the manufacturing sector. Heung (2003) reported that travel and hospitality industry need online payment websites to allow customers to book their tickets and accommodation. Whereas other SME sectors, such as construction and charities, may have much less need for e-commerce (Mallett, 1999; Daniel *et al.*, 2002).

Research has acknowledged the importance of a firm's location and e-commerce adoption (Haig, 2002; Daniel *et al.*, 2003; Ramayah *et al.*, 2003). However, there are few empirical studies investigating this relationship (Haig, 2002). Some researchers reported that if the SMEs are connected to the Internet, location becomes less important for e-commerce adoption because SMEs can sell and buy online anywhere and anytime (e.g., Lee and Park, 2002, Daniel *et al.*, 2003).

Haig (2002), on the other hand, argued that accessibility to e-commerce depends on where the SMEs are located. SMEs in the urban area tend to adopt more e-commerce than SMEs located in the rural area. This supports the earlier study by Hadjimanolis (1999) which found most SMEs in the remote area to lack connection to the Internet because they had limited infrastructure. Location of a SME may be a factor for SMEs to adopt or not to adopt e-commerce, however to this researcher's knowledge there is sparse research conducted on how location may affect e-commerce adoption among SMEs.

In his study of high technology SMEs (HTSMEs) in Malaysia, Mohd Osman (2001) found that most HTSMEs were located in the Central region. Although the government have placed a few incubators (high technology parks) for SMEs to reside at, most SMEs preferred to run their businesses in the Central region, where Kuala Lumpur, the capital city of Malaysia is located at. Mohd Osman (2001) argued that most SMEs favoured the Central region because the region is said to have uninterrupted power supplies, skilled and professional workers, and good transportation systems by SMEs.

As regards the relationship between ICT adoption and firm size, larger firms are reported to have a tendency to adopt more complex technology than their smaller counterparts (Ordanini, 2006). They have more complex organisational structures than smaller firms and, hence, have internal requirements for extensive ICT (Premkumar and Roberts, 1999). Thong and Yap (1995), for example, found that business size is the most significant discriminator in determining the use of IT. Similarly, Wierenga and Ophuis (1997) also reported size of organisations to be positively related to adoption and innovation. Larger firms have the financial resources to adopt new technologies (Premkumar and Roberts, 1999). This view is later supported by Rodriguez (2005). However, the theory that firm size and ICT adoption are positively correlated has been challenged (Fink, 1998). Seyal and Rahman (2003), for example, found that the size, type, and nature of a business are irrelevant to the adoption of e-commerce. This finding is supported by Scupola (2003), who also found that size did not contribute as a factor in e-commerce adoption.

It is generally agreed that businesses need to continue to innovate in order to survive or to be competitive (Quintas, 2007). Karshenas and Stoneman (1995) argued that firm age is said to be related to ICT adoption behaviour. This view was later supported by Hollenstein (2002). However, the role of age is not clear. There is a positive impact on adoption in the case of older firms, reflecting to the technological experience they had (Dunne, 1994). But, older firms may have internal resistance or inertia with such mindset as 'It has always been the way we do things!' (Chuang *et al.*, 2007). This could inhibit innovation or e-commerce adoption. Younger firms, on the other hand, are more innovative and tend to adopt more technology (MacGregor and Vrazalic, 2007). This is attributable, in part, to the basic ICT infrastructure available to younger SMEs when they set up a business.

Another factor that is said to facilitate e-commerce adoption among SMEs is IT resources. Ismail (2004) divided IT resources a firm has into two aspects: IT investment and IT expertise. Martins and Kambil (1999) argued that e-commerce will be more assimilated and exploited if firms allowed more investment for technology and knowledge. This view is supported by Goode and Stevens (2000), and Ismail (2004) studies, which found SMEs that spend more on IT will invest in more complex IT than SMEs that spend less. In addition to IT investment, there is evidence that SMEs with IT expertise have a tendency to adopt more e-commerce (Ramayah *et al.*, 2003; Ismail, 2004; Caldeira and Ward, 2003). For example, Caldeira and Ward (2003) found SMEs that have IT expertise with more prior experience from IT application were more likely to adopt e-commerce.

3.2.5.2 External factors – Environment related factors

The external environment is the arena in which an organisation conducts its business (Tornatzky and Fleischer, 1990). It influences the diffusion of new technology and its applications across organisational and institutional contexts. According to Scupola (2009), among the important environmental pressures in SMEs' e-commerce adoption is the pressure from trading partners, such as suppliers and customers (Iacovou *et al.*, 1995; Jeyaraj *et al.*, 2006), competitive

pressure (Iacovou *et al.*, 1995; Looi, 2003), level of national infrastructure (Scupola, 2003) and government involvement in fostering e-commerce adoption (Corbitt and Thanasakitt, 2002; Al-Qirim, 2006; Kuan and Chau, 2001; Scupola, 2005).

Scupola (2005) argued that pre-existing technological communities are very important because they influence the adoption of the new technologies. Hadaya (2006) claimed that consultants and other ICT experts are essential in encouraging and facilitating the use of electronic marketplaces. This view is supported by Chong and Pervan (2007) that pointed out the industry environment is a key factor for the adoption of e-commerce in organisation. Nevertheless, Corbitt and Thanasakitt (2002) argued that in most small economies, particularly in developing countries like Malaysia, regulatory environment, which is usually managed by the government, seems to be the key factor for the adoption of innovation in organisations.

In Malaysia, the government has taken an active role in the establishment of ICTs. For a long time, Malaysia has been one of the 'Asian miracle economies' with its pro-market economy and seemingly transformative capacity (Wong, 2003). More importantly, the Malaysian case is one of the most systemic and substantive socioeconomic and cultural transformations via ICT in any country (Wong, 2003). ICTs, and particularly e-commerce, are considered to be very important to the government. Many ICT policy initiatives have been designed to encourage businesses, especially SMEs, to adopt e-commerce (SMIDP, 2001-2005). Government influence on ICT adoption, particularly in e-commerce adoption by SMEs in Malaysia will be discussed further in the last part of this chapter.

3.2.6 Reasons for, Benefits of, and Inhibitors to E-commerce Adoption

Most studies of ICT adoption focus on the factors or determinants that lead to the adoption. Several studies examined the consequences after the decision to adopt has been made and also the barriers that SMEs encounter in order to adopt ICT. Corbitt and Thanasakit (2002), for example, argued on reasons why SME adopt

e-commerce. MacGregor and Vrazalic (2007) investigate benefits of e-commerce in their study of e-commerce adoption by SMEs among three countries, namely, Australia, Sweden, and the USA. Scupola (2009) recently extended her e-commerce model, which was based on TOE framework, by examining the barriers and benefits of e-commerce adoption in terms of technological context. She also included resource constraints that firms have as a factor of organisational context in her model.

The next section will now look at benefits that SMEs gain by adopting e-commerce and also the inhibitors for e-commerce.

3.2.6.1 Reasons for E-commerce Adoption

Most studies on e-commerce adoption focus on the facilitators that may have influenced SME managers to adopt e-commerce (e.g., Poon and Swatman, 1999; Poon, 2000; Daniel *et al.*, 2002; Quayle, 2002; Daniel, 2003; Drew, 2003; Lertwongsatien and Wongpinunwatana, 2003; Martin and Matlay, 2003; Michalak, 2003; Scupola, 2003). But, there are still only limited studies on reasons why SMEs adopt technologies, particularly e-commerce (Corbitt and Thanasakitt, 2002).

Corbitt and Thanasakitt (2002) suggest that reasons why SMEs adopt e-commerce are not necessarily factors that facilitate the adoption. The reasons for adoption may simply explain why an SME made that particular decision (Corbitt and Thanasakitt, 2002). In her study of seven SMEs in Italy, Scupola (2003) found that one of the reasons why SME managers adopted e-commerce was unanticipated, an adoption she termed 'just by chance'. The 'just by chance' adoption of e-commerce is more a reason for the adoption rather than a facilitating factor in e-commerce adoption. In the same vein, the term 'guts feel' coined by Quayle (2002) is more applicable as a reason for e-commerce adoption rather than as a factor that encourages e-commerce adoption among SMEs. In their interview of SMEs in Australia, Corbitt and Thanasakitt (2002) found reasons given by SMEs there to adopt e-commerce were 'it is the way to go', 'to

follow the trend, 'we must have it', 'web is essential part of the businesses', and 'everybody has it'.

Table 3.5 shows some potential explanations that can be considered as reasons why SMEs adopt the Internet and e-commerce found in previous studies. Some of these reasons could also serve as factors that lead to e-commerce adoption. For example, Corbitt and Thanasakitt (2002) found that 'government pressure' was the reason why SMEs adopt e-commerce, while Scupola (2003) claimed that it was a factor that facilitates e-commerce adoption.

Table 3.5: Reasons for SME managers to adopt e-commerce

Reasons to adopt	Reported by
It is the way to go	Corbitt and Thanasankit (2002)
We must have it	Corbitt and Thanasankit (2002)
Website essential part of business	Corbitt and Thanasankit (2002)
To follow trend	Corbitt and Thanasankit (2002)
Just by chance	Scupola (2003)
Pressure from government	Teo <i>et al.</i> (1998), Corbitt and Thanasankit (2002)
Everybody has it	Corbitt and Thanasankit (2002)
Guts feel	Quayle (2002)
To impress customers	Mehrtens <i>et al.</i> (2001), Scupola (2003), Rodriguez (2005)
Competitive pressure	Daniel <i>et al.</i> (2003), Looi (2003), MacGregor and Vrazalic (2007),
Managerial enthusiasm	Poon and Swatman (1998), Teo <i>et al.</i> (1998)

3.2.6.2 Benefits for Adopting E-commerce

There are studies that focus on the benefits of adopting e-commerce (e.g., Beal and Abdullah, 2002; MacGregor and Vrazalic, 2007). A review of these studies shows arguments both in favour of e-commerce as well as doubts over the real benefits that a firm may get. To start, this section will consider those studies that have presented arguments in favour of e-commerce. The next section will look at studies that have presented empirical evidence that critically analyses the possible benefits of e-commerce.

Several authors have forwarded interesting explanations for why firms should adopt e-commerce. Most of these authors based their arguments on the utilisation

of e-commerce as a powerful tool to target a larger pool of customers. For instance, Beal and Abdullah (2002) argue that the Internet offers the means for reaching many potential customers. Customers can view a firm's website, find information on its products and services, and finally buy online. It is often stressed that with the Internet, firms can do business all over the world, 24 hours a day, and 7 days a week. Through e-commerce, users (consumers and businesses alike) have more choices and can shop at more convenient times. Customers can compare prices and conditions of sales to obtain the best terms. Similarly, Turban *et al.* (2003) contend that e-commerce opens firms' doors to the entire world, thus distance is no longer a barrier. Firms can sell their products and services anywhere as long as the other parties are connected to the Internet. Through e-commerce, there is no need for intermediaries, and so customers can communicate directly with producers.

Other arguments in favour of e-commerce adoption outline other benefits. Kaur (2005), for instance, highlights the fact that e-commerce allows businesses to communicate and share information. It lowers communication costs and reduces the time-to-market for goods and services (Kaur, 2005).

Another line of argument revolves around competitive parity. This argument contends that since most of the others are adopting e-commerce, and thus attracting more customers, to maintain competitive parity, e-commerce adoption is absolutely important. For instance, Akkeren and Cavaye (1999) argue that businesses that are not involved in e-commerce will be left behind in the global marketplace. This same sentiment is reflected in Porter (2001) and Adham and Ahmad (2005) when they declared e-commerce to be one of the 'preconditions' for a firm's success in today's business world.

However, alongside these persuasive arguments, several researchers have also presented significant empirical studies that present opposite view points. There is limited evidence that e-commerce conveys tangible benefits to organisations. Pool *et al.* (2006), for example, claim that many firms are still struggling to determine whether e-commerce brings advantages to their businesses. Similarly,

Zhu and Kraemer (2005) also argue that firms in their study were still unclear if expenditure on e-commerce improved their businesses. Many e-commerce benefits actually fall into the intangible category (MacGregor and Vrazalic, 2004). In the UK, Daniel and Wilson (2002) find that firms adopting e-commerce do not gain as many benefits as they expected. The benefits SMEs expected after e-commerce implementation did not match the drivers that actually persuaded them to adopt e-commerce (Daniel and Wilson, 2002). Daniel and Wilson (2004) also found that the greatest benefits to firms are limited to internal knowledge sharing and communication between employees within the firm. Firms in Australia also reported that they did not reap significant short-term benefits from e-commerce (Poon and Swatman, 1999). In fact, the latest Sensis e-Business report (2008) found that nearly 50% of SMEs that had recovered their e-commerce investment claimed they did not know what their 'return on investment' (ROI) had been (Sensis e-Business, 2008). To make it worse, some firms claim that e-commerce means distraction from core activities, and in some circumstances may even involve significant costs and risks (Brown, 2002). The benefits arising from e-commerce developments are highly subjective (Zhu and Kraemer, 2005; Daniel and Wilson, 2003; MacGregor and Vrazalic, 2007); it depends on whether the organisation investing in e-commerce brings advantages. Table 3.6 display some benefits of e-commerce adoption found in previous studies.

Table 3.6: E-commerce benefits: A summary of research

Benefit reaped	Reported by
Reduced operating costs	Abell and Lim (1996); Poon and Swatman (1998); Quayle (2002); Stockdale and Standing (2004); MacGregor and Vrazalic (2007).
Enhanced status	Abell and Lim (1996); Rodriguez (2005)
Increased sales	Abell and Lim (1996); MacGregor and Vrazalic (2007).
Increased productivity	Mustafa and Beaumont (2004)
Market expansion	Abell and Lim (1996); Poon and Swatman (1998); Quayle (2002); Daniel and Wilson (2002).
Task accomplished more quickly – improve efficiency	Corbitt and Thanasakit (2002); MacGregor and Vrazalic (2007).

Source: adapted from MacGregor and Vrazalic (2007, p.162).

3.2.6.3 Inhibitors to E-commerce Adoption in SMEs

Like facilitators of e-commerce adoption of SMEs, the barriers to e-commerce can be classified as internal and external to the business. Hadjimanolis (1999), in a study of e-commerce adoption by SMEs in Cyprus, found that external factors can be further categorised into supply barriers (difficulties obtaining finance and technical information), demand barriers (e-commerce not fitting with the products/services or not fitting with the way client did business) and environmental barriers (security concerns). Internal barriers were further divided into resource barriers (lack of management and technical expertise) and system barriers (e-commerce not fitting with the current business practices). Table 3.7 shows the barriers of e-commerce adoption found in previous studies.

Table 3.7: Barriers to e-commerce adoption found in previous studies

Barriers to e-commerce adoption	Reported by
High cost e-commerce implementation; Internet technologies too expensive to implement	Fielding (1996); Lawrence (1997); Puro and Campbell (1998); Van Akkeren and Cavaye (1999); Riquelme (2002); Quayle (2002).
E-commerce too complex to implement	Fielding (1996); Quayle (2002).
Low level of existing hardware technology incorporated into the business	Lawrence (1997).
SMEs need to see immediate ROI and e-commerce is a long-term investment	Lawrence (1997); McGowan and Madey (1998).
Organisational resistance to change because of the fear of new technology amongst employees	Lawrence (1997); Van Akkeren and Cavaye (1999)
Preference for and satisfaction with traditional manual methods, such as phone, fax and face-to-face	Lawrence (1997); Poon and Swatman (1999); Ventakesh and Fink (2002)
Lack of technical skills and IT knowledge amongst employees; Lack of computer literate/specialised staff	Lawrence (1997); Van Akkeren and Cavaye (1999); Riquelme (2002); Quayle (2002); Chau and Turner (2002)
Lack of time to implement e-commerce	Lawrence (1997); Van Akkeren and Cavaye (1999); Walczuch <i>et al.</i> (2000)
E-commerce is not deemed to be suited to the way the SME does business	Iacovou <i>et al.</i> (1995); Abell and Lim (1996); Poon and Swatman (1999); Hadjimanolis (1999).
E-commerce is not deemed to be suited to the products/services offered by the SME	Hadjimanolis (1999); Walczuch <i>et al.</i> (2000); MacGregor <i>et al.</i> (2010)

E-commerce is perceived as a technology lacking direction	Lawrence (1997)
Lack of awareness about business opportunities/benefits that e-commerce can provide	Quayle (2002)
Lack of available information about e-commerce	Lawrence (1997)
Concern about security of e-commerce	Purao and Campbell (1998); Hadjimanolis (1999);); Poon and Swatman (1999); Quayle (2002); Riquelme (2002)
Lack of critical mass among customers, suppliers and business partners to implement e-commerce	Abell and Lim (1996); Hadjimanolis (1999)
Heavy reliance on external consultants (who are considered by SMEs to inadequate) to provide necessary expertise	Lawrence (1997); Van Akkeren and Cavaye (1999); Chau and Turner (2002)
Lack of e-commerce standard	Tuunainen (1998)

Adapted from MacGregor and Vrazalic (2004)

The table displays a list of barriers that firms faced to adopt e-commerce. Among the barriers that were found in most studies includes high cost to implement e-commerce, lack of IT staff skills, lack of time, e-commerce seems not relevant to firms, concern about security on e-commerce, and heavy reliance on external consultants.

3.2.7 Government and E-commerce Policy For SMEs

There is a plethora of policy programmes by which governments can extend assistance to SMEs. However, policy programmes for SMEs differ across national economies to suit local conditions and circumstances (Harvie and Boon-Chye, 2002). Many of these programmes are based on promoting ICT policies. Part of the reasons is because government everywhere believe ICT is the key driver for economic growth and it makes a significant contribution to the social fabric and wealth of a country (Taylor and Murphy, 2004; Newton, 2006). Some examples of schemes to assist SMEs to use ICT include the UK 'SME-E-commerce' programme, the Small Firms Merit Award for Research and Technology (SMART), and the EU assistance for establishment of Business Innovation Centres (BICs) (Bridge *et al.*, 1998; Dixon *et al.*, 2002).

Governments everywhere show interest in funding, commissioning and publishing studies that show ICT to boost productivity (Macdonald, 2004). However, government enthusiasm for ICT pays scant regard to the 'productivity paradox'⁷. There is an apparent contradiction between the remarkable advances in computer power and the relatively slow growth of productivity at the level of the whole economy, individual firms and many specific applications (Brynjolfsson and Hitt, 1993). It is hard to explain the lack of improvements in productivity after decades of investment in ICT. Brynjolfsson and Hitt (1998) argue that the greatest benefits from ICT are realised when the computer investment is coupled with other complementary investments, such as new strategies, new business processes, new organisation and training.

3.2.7.1 Government and E-commerce

One of the ICTs that interests government everywhere is e-commerce. E-commerce is said to be crucial for economic success, especially for developing countries and SMEs (Corbitt and Thanasankit, 2002). Almost every government is very enthusiastic about e-commerce. They believe that e-commerce conveys undisputed benefits, that e-commerce will help SMEs by reshaping customer and supplier relationships, streamlining business processes and, in some cases, restructuring whole industries (Daniel, 2003; Pool *et al.*, 2006). As such, many e-commerce policy programmes were designed to assist SMEs to adopt and use e-commerce. In discussing e-commerce programmes, both small and large firms must be considered since they interact in the chain of production. In addition, small firms of today may become large firms of tomorrow (Storey, 1994).

According to Corbitt and Thanasankit (2002), there are two types of e-commerce policy programmes. Some governments design e-commerce policy programmes based on the public and private sector promoting e-commerce. This is the case for large economies, such as the European countries, the UK, Japan, and Australia. Another type of e-commerce programme is a 'jump start' policy,

⁷ The productivity measures do not seem to show any impact from new computer and information technologies has been labelled the "productivity paradox" (Solow, 1987).

where the government intervenes directly. This is the case for smaller economies, such as Ireland, Singapore, Hong Kong, and Malaysia.

Many governments in Europe design e-commerce policy programmes to foster public confidence in the electronic marketplace. In Finland, for example, there is a policy which fosters a strong partnership between public administration and industry in its approach to develop the information society. Finland aspires to be the first in the world to introduce a new-generation broadband telecommunication network (Corbitt and Thanasakit, 2002). The German government strengthens public efforts by establishing private-public partnerships, such as the D21 initiative (a network of political parties, enterprises, associations and other institutions) to improve the main conditions for Germany to quickly and successfully transit into the information and knowledge society (Andersen *et al.*, 2004).

In Denmark, the Danish government designed three major knowledge diffusion programmes, specifically intended to diffuse e-commerce: the EDI-strategy, the e-commerce initiatives, and the e-commerce action plan (Andersen *et al.*, 2004). In the UK, the government plays a role as the enabler of e-commerce by appointing an 'e-Minister' and 'e-Envoy' to report directly to the UK Prime Minister (Cabinet Office, 2002). These initiatives aim to modernise business by creating confidence in both people and business in e-commerce. Australia and Japan e-commerce policy programmes, on the other hand, depend more on the private sector. The aim is to ensure a predictable, minimalist, consistent and simple environment for e-commerce (Corbitt and Thanasakitt, 2002). In Australia, the government gives a 'light touch' but plays a key role through online delivery of government services. In Japan, the government promotes e-commerce as part of internationalisation policy, such as allowing customs duties exemption on electronic components (Corbitt and Thanasankit, 2002).

In contrast to some large economies, most small economies look to 'jump-start' e-commerce policy programmes. The Irish government, for example, is developing infrastructure to support e-commerce and skills in the university

sector. An e-commerce specialist unit was established within the Development Directorate to promote and support e-commerce (DETE, 2001). To jump-start Singapore as an e-commerce hub, the Singapore government focused on the sectors in which Singapore has an inherent advantage as a hub. Incentive schemes and other support programmes are used to attract international and local firms to base their e-commerce activities in Singapore (Kendall *et al.*, 2001). In Hong Kong, e-commerce policy programmes are focused primarily on building the IT infrastructure to support e-commerce. The government acts as the primary promoter by providing financial support, policy encouragement and infrastructure development. Schools in Hong Kong are required to make e-commerce a part of the school curriculum (Corbitt and Thanasankit, 2002). As well as other small economy countries, Malaysia too, designed 'jump start' e-commerce policy programmes to promote e-commerce. The next section will discuss in more detail regarding Malaysia e-commerce programmes, particularly to SMEs.

3.2.7.2 Government, SMEs and ICT in Malaysia

Malaysian government policy programmes for SMEs

The Malaysian government has long recognised the importance of SMEs and has been proactive in devising policies and strategies to assist them. The government's commitment to SMEs can be seen in Mahathir Mohamad's Vision 2020 speech:

"The SMEs will be one of the primary foundations for our future industrial thrust. The Government is fully committed to its healthiest developments."

(Mohamad, 1991, p.7)

Most government initiatives to assist SMEs have been planned by SMIDEC. Under SMIDEC, programmes tend to focus on integrating SMEs with the activities of large firms and also technological programmes. Examples of these government initiatives include:

- The Industrial Linkage Programme (ILP), aimed at developing domestic SMEs into competitive manufacturers and suppliers of parts and components and related services to MNCs and large firms;

- The Global Supplier Programme (GSP), developing critical skills and linkages to large firms, and mentoring SMEs to become competitive suppliers of parts and components to firms worldwide;
- The SME Expert Advisory Panel Programme (SEAP), to strengthen technical advisory services to SMEs by giving on-site assistance by industry experts to transfer their technology know-how and industry experience.

Other programmes also include the Technology Development Programme, the Enterprise 50 Programme, the Infrastructure Development Programme, the Skills Upgrading Programme, and the Financial Assistance Programme, which cut across all the other SME development programmes (SMIDP, 2001-2005).

Under the Financial Assistance Programme, SMIDEC offers financial assistance in the form of incentives, grants, loans, and supporting services (Table 3.8). Grant assistance is the most popular among SMEs. Under grant assistance, SMEs get reimbursement from the government for up to 70% of certain expenses; for instance, ISO certification, auditing the factory and the acquisition, and upgrading of equipment.

Table 3.8: Financial assistance programme

Tax incentives	Grant assistance	Loans, credit and equity participation	Infrastructure and supporting services
<ul style="list-style-type: none"> • Pioneer status* • Investment tax allowance (ITA)* • Reinvestment allowance (RA)* • Double deduction of expenses incurred on own brand advertising, export credit insurance premiums and research and development 	<ul style="list-style-type: none"> • Industrial technical assistance fund (ITAF) • Factory auditing scheme • E-commerce grant • E-manufacturing grant • Engineering design • Technology, Industry, Government, and E-economy Revolution (TiGeR) • RosettaNet • HeadStart Programme 	<ul style="list-style-type: none"> • Minimum lending guidelines for SMEs • Government-funded financing facilities • Credit guarantees for SME borrowers • Equity financing and venture capital 	<ul style="list-style-type: none"> • Infrastructure development grant • Supporting services: <ul style="list-style-type: none"> - technical and business advisory clinics or briefings - information dissemination and promoting awareness - product displays and business matching - promotion of exports by SMEs

Source: SMIDP (2001-2005)

* Not restricted to SMEs

E-commerce policies in Malaysia

Like other governments, such as the UK, Singapore, and also Thailand, among the ICT programme that interest Malaysian government is e-commerce. The role of government is to make sure the e-commerce policy is invariably seen as a key strategy: 1) for quickening the rate of economic development, 2) to gain competitive advantage in trade, 3) to internationalise and globalise indigenous products and services, and 4) to foster efficiency and social equality across the nation (Malaysia, 1997). The highlight of the Malaysian government initiatives on e-commerce is the Multimedia Super Corridor (MSC) (see Chapter 2). The purpose of MSC is to create the perfect global multimedia climate for e-commerce. Its role in e-commerce strategy is (MDC, 2006b):

- to provide the infrastructure and 'infostructure' for firms to innovate and experiment with new ICT and services;
- to enable fast and effective communication over networks via fibre-optic cabling; and
- to help firms venture into e-commerce.

E-commerce was launched in 1999 as one of the MSC flagship applications (see Chapter 2). In 2000, this flagship merged with what is called the 'world-wide web manufacturing' flagship to form the e-business flagship application. The e-commerce flagship application aims to provide better services to the Malaysian community, and to encourage business and the community to accept e-commerce as part of daily life (MDC, 2006b). It aims to turn Malaysian businesses into world-class firms.

The Malaysian government has designed various policy initiatives to promote e-commerce in the country (Malaysia, 1997):

- the establishment of an electronic procurement system (e-procurement⁸) as part of the electronic government flagship;

⁸ In order to encourage SMEs to adopt e-commerce, the government has developed a website with an e-procurement system (which is called e-perolehan). On this website, the government provides links to supplier registration forms and guidelines, e-bidding, pricing, and a tender notice board. SMEs need to use this website to bid for any government tenders or contracts (Malaysia, 2009). This website lets SMEs search using keywords, save searches and download all the information needed to respond to a tender (Malaysia,

- the establishment of a multipurpose card, which uses smart chip technology to become an electronic purse/wallet;
- the development of an electronic catalogue, such as Malaysia Online Mall;
- the provision of entertainment on demand, such as pay per view; and
- the implementation of education on demand via the Internet.

The Malaysian government has also developed cyber laws in the Communications and Multimedia Act 1998, Digital Signature Act 1997, Computer Crimes Act 1997, and the Telemedicine Act 1997 (Mirandah, 2007). More recently, the government enacted to an E-commerce Act 2006. This Act provides legal recognition of electronic messages in commercial transactions, and also facilitates commercial transactions through electronic means (Malaysia, 2007a). Despite this mass e-commerce legislation, many people in the country still do not know anything about these laws (Jalani and Hussein, 2005).

E-commerce schemes for SMEs in Malaysia

As in other small economies, the Malaysian government intervenes directly in promoting e-commerce to the nation, particularly to the SMEs. There are many e-commerce schemes that government offer to SMEs. Among the grants are:

- E-commerce grant - for SMEs in manufacturing firms to trade online (see next section);
- E-manufacturing grant for SMEs to use ICT to integrate themselves in the global marketplace;
- Technology-Industry-Government for e-Economic Revolution (TIGeR) project for manufacturing firms to join the online global supply chain, that is to link Malaysian SMEs manufacturing firms to large and established firms such as Microsoft, DHL and other large firms online (*Economists*, 2006); and

2009). Open tendering is used for procurements above RM200,000, closed tendering for procurements between RM50,000 and RM200,000, and direct purchasing for procurements below RM50,000. Generally, foreign bids are invited only where domestic goods and services are not available. A series of tender committees opens and evaluates the technical and financial aspects of bids anonymously and according to a standard scoring system. Depending on the value of the procurement, a tender board or the Ministry of Finance, or the Cabinet in exceptional cases, makes the final selection (Malaysia, 2009).

- the TIGeR e-Logistic partnership with the Royal Customs and Excise Department (RosettaNet) project for firms to integrate their systems with the e-commerce customs declaration of non-dutiable exports.

Most of these grants are still available (SMIDEC, 2008) though the e-commerce grant fund had been exhausted by 2002. Of the schemes to encourage SMEs in Malaysia to use e-commerce, the 'e-commerce grant' scheme is one of the most popular (SMIDEC, 2001).

E-commerce grant for SMEs

The e-commerce grant was introduced by SMIDEC in July 2000 to assist SMEs to adopt e-commerce. It is a type of jump start policy initiative with the aim of integrating SMEs quickly into the world of e-commerce by promoting SMEs' goods and services beyond domestic boundaries (Corbitt and Thanasankit, 2002). The e-commerce grant is available to any SME in the manufacturing sector in Malaysia with between 1 and 150 employees and paid-up capital of less than RM500,000. Among the objectives of the e-commerce grant are (SMIDEC, 2001):

- to encourage SMEs to have websites;
- to help SMEs to advertise their products and services on their websites;
- to assist SMEs to engage in online transactions; and also
- to overcome SMEs' skill constraints when engaging in e-commerce.

Under the e-commerce grant scheme, SMEs obtain grants of up to 70% of project costs to a maximum of RM10,000. This funding is for firms to design a welcome page for an electronic product catalogue, and also to cover the costs of joining at least one of thirteen e-commerce community portals. According to SMIDEC (2001), these community portals may be an individual or a firm responsible for providing e-commerce solutions to SMEs. Their role is to promote an SME with an e-commerce grant to list its website under their portals. The role of these community portals is not only to advise SMEs on how to match the business to the possibilities of e-commerce but also how to create the welcome page and product catalogue (SMIDEC, 2001). The community portals also give SMEs

advice on designing and branding, advertising and administration training, administration services, daily backup services and support (SMIDEC, 2001). SMEs are allowed to join up to five community portals (SMIDEC, 2001), but the amount of the government funding is only RM10,000 whether SMEs decide to list their websites in one or more portals. If the costs exceed the funding amount, SMEs need to top up the remainder to the portals in which their websites reside. It should be noted that the government funding amount is not given to SMEs, but to the community portals. This amount is to cover only one year operation of the websites.

According to one of the officers in-charge of this e-commerce project, more than 3,500 SMEs applied for the grant. However, only 1,818 applications were approved. The project ended a few years ago and has not been revived since. At its inception, it was expected that recipients of SME e-commerce grants would ultimately have their own websites, be able to market their products and services on the Internet, and prepared to sell online. Further investigation is needed to understand the current state of e-commerce adoption among SMEs in Malaysia, particularly SMEs that have received the e-commerce grant – such as what happens to SMEs after receiving the grant, and what did government do after giving the entire grant to SMEs.

3.3 SUMMARY

This chapter discusses the literature review of e-commerce adoption and SMEs. An SME is defined based on number of employees, between 10 and 250 employees. This is in line with the definitions of SMEs used in other countries (European Commission, 2002). E-commerce, on the other hand, is defined as sharing of business information, maintaining business relationships, and conducting business transaction by means of Internet-based technology (Poon and Swatman, 1999; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007).

E-commerce is important because it has the potential to accelerate existing trends and introduce new ways of conducting business (Scupola, 2003; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007). SMEs, on the other hand, are very

important to the national economies because they represent more than 90% of businesses in the country. Many studies claimed that e-commerce is very important to SMEs to survive in the global marketplace. This is because it is said that only through the Internet; SMEs are able to compete with large firms because the Internet allows equal access for both small and large firms to explore their potential. However, the literature shows that SMEs market has been relatively slow to adopt e-commerce. Thus, this has opened up several issues about e-commerce and SMEs.

The literature established that there are variety ways to explain e-commerce adoption by SMEs. Some looks at the stage approach, some examine the technological means that SMEs used, and some others look at the business activities that occur on the Internet. The literature reviews lead the researcher to the three components of e-commerce: e-mail, online buying, and website (to indicate online selling). These components will be the first measure of e-commerce adoption among SMEs. In addition to these components, activities that occur on each of the component, particularly the website, will also be examined. It was found that the website (to indicate online selling) is the most crucial component of e-commerce because SMEs need to invest to have a website.

In order to investigate the e-commerce adoption among SMEs, technological innovation literature was reviewed. Two technological innovation frameworks were identified: the diffusion of innovation (DOI) and technological-organisational-environmental (TOE) as a reference discipline. A wide range of factors that facilitates e-commerce adoption by SMEs were reviewed. It was found that there were more than twenty factors influencing SMEs to adopt e-commerce. However, no consistent set of factors that facilitate the adoption of ICT, particularly e-commerce has been found to date - some are relevant in some studies, but not in others (Ordanini, 2006). The conflicting results obviously deserve further investigation. Further investigation of these factors found that there are two major groups of determinants: the internal factors, consisting of the SME and SME manager demographic characteristics, and the external factor:

government support. Although these two groups have been investigated in prior studies, there is very limited research focussing in-depth on the organisation's demographic characteristics, such as gender and age of SME manager, firm size, and firm age. Therefore, these two groups of factors will be explored. The internal factors include: 1) five managerial demographic characteristics: education, manager experience living overseas, age, gender, and ethnicity; and 2) five SME demographic characteristics: its economic sectors, size, location, age, and IT resources.

In addition to the internal factors, the external factor, i.e. the government support for SMEs to adopt e-commerce will also be examined, i.e. how government support has helped SMEs to adopt e-commerce. This is because the government plays an important role in Malaysia, particularly in encouraging SMEs to adopt e-commerce. The Malaysian government design a lot of ICT policy initiatives, particularly e-commerce policy initiatives, to promote the importance of e-commerce in SMEs. There is very little research that explores SMEs that receive support from the government. This study will explore if the government support given to SMEs is appropriate.

Further investigation of factors that facilitate e-commerce adoption leads to the reasons for e-commerce adoption. It was found from the literature that the reasons for SMEs to adopt e-commerce are slightly different from the factors that facilitate e-commerce adoption. Reasons for SMEs to adopt e-commerce are not necessarily factors that facilitate e-commerce adoption. However, there is very little research focus on the reasons why SMEs adopt e-commerce. This study looks at the reasons why SMEs adopt e-commerce. The reasons include: a website is nice to have, it is the way to go, to follow the trend, to enhance company image, and to impress customers. In addition to the reasons, the benefits of e-commerce adoption by SMEs will also be examined. Few studies look at the benefits of e-commerce. Most benefits are perceived rather than achieved and are intangible rather than tangible. This study includes these two elements in order to understand what the most important reasons why SMEs adopt e-commerce and what benefits they gain from the adoption .

E-commerce adoption by SMEs could be hindered by a number of barriers. The literature review identified a number of barriers that hinder SMEs to e-commerce. However, most studies on barriers to e-commerce focus on developed countries. There are very few studies that look at barriers to e-commerce adoption faced by SMEs in developing countries, such as Malaysia. Therefore, this study will investigate if barriers that deter e-commerce adoption in developed countries are similar to barriers faced by SMEs in Malaysia.

There are very limited studies on e-commerce adoption by SMEs in Malaysia, particularly on the effect of government support to SMEs. The media and ICT consultants in Malaysia argued that e-commerce was widely used in Malaysia and that many SMEs in Malaysia had adopted it. The literature, on the other hand, claimed that the adoption of e-commerce among SMEs everywhere was declining. The director of one of the government agencies that had provided the researcher a list of 1,818 SMEs that received e-commerce grant claimed that he was uncertain to what extent SMEs in Malaysia have used e-commerce. The situation of e-commerce adoption among SMEs was very uncertain and there were no latest literature on e-commerce and SMEs at the time this research was commenced. Hence, the researcher conducted two preliminary studies to gauge the recent situation of e-commerce adoption by SMEs in Malaysia and to examine the viability of carrying out study of e-commerce adoption among SMEs in Malaysia. In the following chapter, the results of the preliminary studies are presented. The literature review and the preliminary studies have led the researcher to the research questions for this study.

CHAPTER 4

PRELIMINARY STUDY

4.0 INTRODUCTION

This chapter discusses the findings of the preliminary study. The study consists of two parts, which are telephone interviews and websites analysis. The objectives were to explore the general view of e-commerce adoption and usages among SME managers in Malaysia, and to look at the pattern of Malaysian SMEs websites, particularly those SMEs which had received government e-commerce grants.

As stated in Chapter 3, there are very limited studies on e-commerce adoption among SMEs in Malaysia. The literature claimed that e-commerce among SMEs in both developed and developing countries is declining. The media in Malaysia, on the other hand, reported that many SME in Malaysia had adopted e-commerce. The researcher was uncertain of the real situation of e-commerce adoption among SMEs in Malaysia. Accordingly, the researcher conducted telephone interviews with eight SME managers to explore the take-up of e-commerce among them. This was followed by the analysis of 101 SME websites which had received government grants. The findings of the preliminary studies provided the researcher with some background of e-commerce adoption among SMEs in Malaysia and justified the rationale of this research.

4.1 RESEARCH METHODOLOGY

The preliminary work for this research was conducted from November 2005 to April 2006. A series of eight telephone interviews were conducted with eight SME managers, followed by a website analysis of 101 SMEs that had received government e-commerce grants.

4.1.1 Telephone Interviews

The telephone interviews were conducted with the manager of each SME firm. The aim of the interviews was to get some general ideas about e-commerce in Malaysia. The main advantage of telephone interviews is that the researcher can reach a number of different SME managers in a relatively short period of time (Sekaran, 1992). The respondents often feel less uncomfortable disclosing personal information over the phone. The main disadvantage of telephone interviews is that the researcher is not able to see the respondent to read the non-verbal communication (Jones, 1997). In addition, the respondent can terminate the interview without warning or explanation, by hanging up the phone.

To minimize non-response problem, pre-interview calls were made to SME managers in Malaysia to set appointments for full telephone interviews so as to ensure that managers were available when called and willing to allocate time for the interviews. The researcher's personal contacts were used in identifying the sample. Out of 20 pre-interview calls, eight managers agreed to be interviewed. The telephone interviews were personally conducted and lasted 15 - 30 minutes. In addition, their respective firms' websites were also visited to gain some insights into their firms' use of e-commerce. The preliminary interviews helped develop and refine the interview questions in actual data collection. Below are the initial interview protocols with the eight SMEs managers:

1. Could you please tell me about your background?
2. Do you have any Internet or e-commerce activities?
3. What kind of Internet activities do you use?
4. What kind of e-commerce activities do you use?
5. What are the reasons for your company to adopt e-commerce? What are the factors that facilitate you or your company to adopt e-commerce
6. What are the advantages of e-commerce?
7. What are the disadvantages of e-commerce?
8. Why don't you adopt e-commerce? Are there any specific reasons that you can think of? (*Asked only those who did not have Internet or e-commerce activities)

4.1.2 Website Analysis

In the second part of this preliminary study, 101 Malaysian SME websites which had received government e-commerce grants were analysed. The aim of this website analysis was to explore the extent to which SMEs use websites to sell their goods and services to customers. The website analysis provided the researcher with some ideas of the kinds of e-commerce activities available on the SMEs' websites.

The SME website addresses were selected from the Malaysian SMIDEC database. The SMIDEC provides 13 e-commerce community portals for SMEs. This database provides a list of all manufacturing SMEs with an e-commerce grant from the government (as described in Chapter 3). The database is not available commercially; however, it was made available to this researcher through a personal contact. The website analysis involved website assessments and testings. Firm websites were identified and tested several times for operability such as downloading problems. The contents of all operable websites were examined for evidence of e-commerce activities and how well SMEs were using the Internet to communicate with consumers. The steps taken to locate firm website addresses and determine their operability were adapted from Adham and Ahmad (2005):

1. clicking on the hyperlinks provided on the SMIDEC database;
2. testing for website presence on thirteen e-commerce community portals provided by SMIDEC;
3. using the Google search engine (www.google.com) to confirm the existence of websites;
4. using content analysis (Krippendoff, 1980; 2004; Stemler, 2001) involving website assessment by identifying e-commerce activities; and
5. testing the functions of e-commerce in the websites.

The first step involves locating websites by clicking the hyperlinks. When hyperlinks were found to be inactive, or direct hyperlinks were missing from the SMIDEC list, a second step was performed to locate the website in the e-

e-commerce community portals. This step involves clicking on the hyperlinks of e-commerce community portal websites provided by SMIDEC. The firm's name was then entered into the search boxes of the community portals. For the third step, firms whose websites could not be located in the SMIDEC list or the e-commerce portals provided by SMIDEC, the firms' names were keyed into the Google search engine. If a listing of the firm was still not found, the conclusion was that these firms did not operate a website. The fourth step is to conduct a content analysis on the website. Content analysis of each operable websites was performed to evaluate whether (adapted from Laudon and Traver, 2002, p.180):

- the website provided firm information (online brochureware) (i.e. contact and location details, and firm e-mail address);
- the website offered details about the firm's product and services (online catalogue);
- the firm could receive online enquiries and online requests for quotations (RFQ);
- it could carry out online ordering and online payment;
- it had facilities for customer feedback, a site search facility, interactive communication, online order tracking and stock check availability.

This method is useful for examining trends and patterns in websites (Steve, 2001). It involves identifying and counting certain activities or attributes in the websites (M. Riley *et al.*, 2000). It allows inferences to be made which can then be corroborated with other methods of data collection (Holsti, 1969). It is important to emphasize that this investigation examined firm websites and e-commerce activities dependent on the websites from only the customers' perspective. Other e-commerce activities were excluded. After identifying the activities of the websites, the last step involves testing the function of online request for quotation (RFQ), ordering form, e-mail address, online payment, and online ordering.

4.2 FINDINGS

4.2.1 The Telephone Interviews

The findings from the telephone interviews with SMEs owners are described below. Specifically, firms' characteristics and e-commerce usage, managerial characteristics and the factors such as reasons for, inhibitors to, and benefits of e-commerce adoption are discussed accordingly.

4.2.1.1 Firm descriptions

The first firm (C1) is a family owned business in the food industry. The business started in 1995, and has 18 employees. The firm is located in a rural area and serves the local population. Most of the time, the manager communicates with customers face-to-face. Orders are also taken by telephone and facsimile. The firm has a few computers with basic software, but these computers do not have Internet connection. The manager believes that personal contacts and words of mouth are the means to attract customers.

The second firm (C2) designs and prints magazines and journals, mainly for government agencies. This firm has been operating since 2001 and is managed by two business partners. Both of the managers have been involved with e-commerce from the beginning of the business. They use e-mail to communicate with their customers. The company has an interactive homepage to boost firm image and to impress its customers. However, the managers rarely update the company's homepage. They do take orders via e-mail after they had met their customers face-to-face. All payments are made through bank drafts or bank orders.

The third firm (C3) provides ICT services. This firm has been operating since 1997 and currently has 10 employees. Its main business is to install computers and perform computer maintenance work. The company has been using the Internet since 1999, but only to communicate via e-mail and search for information. The firm has a homepage that provides information on the firm and

type of services offered. The homepage is rarely updated. The firm has never traded online because the CEO believes that the customers are not ready.

The fourth firm (C4) is an ICT consultant firm that offers services to government agencies. This firm was founded in 1996 and currently has 30 employees. It started using the Internet in 1998 and now has broadband connection. All employees have their own staff e-mail. This firm has its own intranet system for sharing internal information. It has designed an interactive website that provides information on the firm, product and services, allowing customers and suppliers to access to the firm's current news. The firm used to have online transaction facilities, but its customers have not been actively using them. Instead, customers use bank drafts or bank orders to make payments.

The fifth firm (C5) provides e-business solutions to customers. The firm offers website spaces to customers' and maintains their websites. This firm started in 1998 with 3 employees, and now has 16 workers. The firm has an interactive website with online payment facility. The manager is an ICT champion who uses a lot of e-commerce activities in his daily business. He utilises his firm websites to sell the business solutions at international level. At the same time, he also buys digital products and services online. His customers however hardly use the online payment facility provided by the firm website. Although they use credit cards to pay for their purchases, the transactions are made through phone. However, the manager is still maintaining the online transactions in the hope that one day all its customers will also use these facilities.

The sixth firm (C6) is a car factory workshop. This firm has 40 employees and has been operating locally since 1990. The firm has a few computers with basic software applications, such as word processing, spreadsheet, and financial packages but has opted not to use e-commerce in its day-to-day business operations. To gain sales, the manager relies on personal contacts and words of mouth to attract with customers, and prefers face-to-face interaction with customers. The firm's management has no intention to use e-commerce because the business has been good.

The seventh firm (C7) is a construction firm with 20 employees. The firm was founded in 2000, and started using the Internet in 2003. E-mail is used for day-to-day business communication with suppliers and customers. The manager has set-up an interactive firm website, providing firm information and type of services offered. Potential customers can use online request for price enquiries. However, the website does not include online ordering or online payment facilities for business transactions.

The last firm (C8) is an electrical firm. This firm is a family business which the manager inherited from his father. The firm was founded in 1988 and currently has 8 employees. The manager uses dial-up facilities to connect to the Internet. He started using the Internet in 2002 to search for business information and market trends. Sometimes, he uses e-mail to communicate with customers, particularly his loyal customers. The firm does not have a website as the manager believes that it was unnecessary for his business.

The characteristics of the eight firms and their e-commerce usages are summarized in Table 4.1.

Table 4.1: Firm descriptions and e-commerce usages

Firm	Type of business	Industry Sector	No. of employees	Year founded	Type of Internet connection	Location	Received government support	E-commerce usages
C1	Food industry	M	18	1995	None	Kelantan	No	None
C2	Printing services	S	2	2001	Broadband	Selangor	No	<ul style="list-style-type: none"> - e-mail with customers/suppliers - website with online brochure ware and online catalogue
C3	ICT maintenance consultants	S	10	1997	Dial-up	Selangor	Yes	<ul style="list-style-type: none"> - e-mail with customers/suppliers - website with online brochure ware and online catalogue
C4	ICT consultants	S	30	1996	Broadband	Kuala Lumpur	Yes	<ul style="list-style-type: none"> - e-mail with customers/suppliers - website with online brochure ware and online catalogue, online enquiries, online ordering and online payment
C5	Service provider	S	16	1998	Broadband	Selangor	Yes	<ul style="list-style-type: none"> - e-mail with customers/suppliers - online brochure ware - online catalogue and online enquiries - online ordering, online billing, online payment and online purchasing
C6	Automobile manufacturing	M	42	1990	None	Penang	No	None
C7	Construction	M	54	2000	Dial-up	Selangor	No	<ul style="list-style-type: none"> - e-mail with customers/suppliers - online brochure ware - online catalogue
C8	Electrical components	M	11	1988	Dial-up	Kuala Lumpur	No	<ul style="list-style-type: none"> - e-mail with customers/suppliers

Note: S – Service M – Manufacturing

4.2.1.2 Manager's demographic characteristics

Table 4.2 shows the profile of the managers. It indicates that all the participants are Malay men. Five of the SME managers interviewed were overseas graduates (62.5%), The table also shows that five managers are aged 40 and above, with the youngest of the managers is 32 years old.

Table 4.2: Manager's descriptions

Firm	Gender	Ethnicity	Age	Education	Experience overseas
C1	Male	Malay	48	Diploma	No
C2	Male	Malay	45	Bachelor Degree	Yes
C3	Male	Malay	36	Bachelor Degree	Yes
C4	Male	Malay	42	Bachelor Degree	Yes
C5	Male	Malay	41	Bachelor Degree	Yes
C6	Male	Malay	44	Bachelor Degree	Yes
C7	Male	Malay	34	Bachelor Degree	No
C8	Male	Malay	32	Bachelor Degree	No

4.2.1.3 Reasons for, inhibitors of, and benefits of e-commerce adoption

The interviews provided some insights into the reasons why SMEs adopt e-commerce and factors that inhibit e-commerce adoption among SMEs. Inspired by their peers, four of the managers in this preliminary study have adopted e-commerce; while the other two were influenced by government promotions. More than half of the managers said that the reason they have websites was to improve their firms' image and to ease communication. One manager said that *"I use e-commerce to establish contact with the government. My customers also persuade me to have website so that he can communicate with me easily."* (C4) Surprisingly, two other managers thought e-commerce would just be something 'nice to have'. This is true especially for smaller firms, which get acquainted with e-commerce due to the influence of friends and relatives.

Two SMEs without the Internet connection mentioned that they were not interested in any Internet activities claiming that it was irrelevant to their

business. This is because they serve on the domestic level. They had reservations toward installing Internet facility as they wanted to avoid misuse of the system. This is emphasised by one manager who claimed, “*Many of my friends had stopped using the Internet because they were not able to deal with staff using the Internet to browse and chat.*” (C8)

Although some of the SME managers have websites with online catalogues, they were not interested in installing online payment system due to trust issue. Apart from that, higher acquiring cost is another reason that prevents them from having such a system. According to one of them, “*the system is expensive and requires ICT expertise to maintain.*” (C6)

When asked about the benefits of e-commerce, the SMEs that use websites claimed that they have attracted and gained more customers. In addition, one manager stated that “[*he*] *adopt[s] websites because it allows [his] customers, potential customers, and suppliers to access to the firm’s current information*” (C5). Another benefit is that e-commerce can enhance the communication between the firm, suppliers, and customers.

Based on the interviews with the eight SMEs, Table 4.3 summarises the reason of, inhibitors to, and benefits of e-commerce adoption.

Table 4.3: Reasons for, inhibitors of, and benefits of e-commerce adoption

Reasons	Inhibitors	Benefits
Government penetration	Too costly	Attract new customer
To enhance firm image	Hardly used	Gain more customers
Customer persuasion	Not relevant to business	Information access
Ease of communication	Failure rate of peers	Means of communication
To establish contact with government	Lack of information on e-commerce	Enhance communication
Being able to search for business information	Lack trust e-commerce	
Nice to have	Lack of IT expertise	

4.2.2 The Website Analysis

The second part of the preliminary study involves websites analysis. This analysis comprises two steps: firstly assessing the websites existence in the Internet public domain using Google search engine and the e-commerce activities, and secondly testing the functions of e-commerce. All website analysis was conducted between November 2005 and April 2006. 101 SME websites were randomly selected and examined. The purpose of the analysis is to assess the functioning, as well as the information and features available on the website. The findings indicate that only 68 firms have operable websites (67.3%), while 33 firms (32.7%) either have technical problems or their websites did not exist although the URL addresses are listed in the SMIDEC database. Out of the 68 firms with operable websites, 30 firms provided their company's contact information, while the remaining firms rely on community portals to display their contact details. None of the 68 firms' websites provided their staff or webmaster e-mail. Thus, it is difficult to identify whether the websites are maintained by their own webmasters or outsourced to other companies.

In regards to the features in the website, only 68 operable websites were tested. All of these 68 websites provided information and thus are classified as online brochureware. Of these, 59 SMEs provided information about their products and services, while this information was absent from the websites of the remaining nine companies. Surprisingly, only two SMEs provided the price of their products and services on the websites. As such, both websites qualify to be classified as online catalogue (with pricing). The analysis also revealed that 31 SMEs were engaged in more sophisticated e-commerce activities, such as online RFQ and online ordering. Only three SMEs had websites with online payment installed.

Next, the functions of RFQ, ordering form, e-mail address, and online payment and ordering were tested. When tested, 80% of the RFQ forms submitted did not return any feedback and the online ordering form was never accessible. A test on correspondence through the e-mail address provided on the websites (68) did not generate any reply, while attempts to order and pay online were unsuccessful

because either the link was broken or the system was not available. The summary of the websites' features and functionality is provided in Table 4.4.

Table 4.4: Website features (n=68)

Website activities	Number of SME
Online brochureware	68
Online catalogue (with prices)	2
Online catalogue (without prices)	57
Online form enquiries	55
Online request for quotation (RFQ)	38
Online ordering	31
Online payment	3
Customer feedback	5
Site search facility	2
Chat or interaction	0
Online order tracking	0
Stock availability check	0

4.3 DISCUSSIONS

The preliminary findings indicate that generally, most SMEs have broadband Internet connection. Some SMEs have company websites and use e-mail, and have even purchased online before. From the interviews, e-commerce adoption is seen to be externally motivated, either by their peers or by the government. Hence, the reasons for adoption included benefits to company image and communication. This can be explained by the limited website activities observed in the analysis. However, reasons for non-adoption were mainly based on distrust towards the system and their own employees, and the inability of SMEs to comprehend the benefits of e-commerce. For instance, one company even suggested that e-commerce is not important to the company, mainly because their market is only domestic. High investment and maintenance costs are also suggested as reasons for limited e-commerce activities on company websites. The analysis also indicates that the founders' characteristics influence e-commerce adoption.

Although the companies which had adopted e-commerce acknowledged the advantages of e-commerce, benefits were still limited to communication (attracting more customers and networking with stakeholders). For instance, SMEs in the service sector, used e-mails more than those in the manufacturing sector. Furthermore, they had websites with online enquiries, online ordering, and online payments; indicating that that particular sector may be a factor that facilitates e-commerce adoption. Firm's size and age may also influence e-commerce adoption. SME firms with a larger number of employees tended to use e-mails and have websites, compared to firms with fewer employees.

4.5 CONCLUSIONS

The results of the preliminary findings show that the pattern of e-commerce adoption among interviewed SMEs was consistent with what had been found during the literature review. Some SMEs used e-mail, some had purchased online before, some had websites with online brochures and catalogues, and some SME's websites had online payment facilities. Nevertheless, some SMEs had never used e-commerce at all, and some stopped using e-commerce altogether. Similarly, the factors that facilitated e-commerce adoption, and the reasons, benefits, and inhibitors of e-commerce adoption, found in this study, are also consistent with previous literature.

Since the interviews were just an exploratory study about the status of e-commerce among SMEs in the country, and because the interviews involved only eight SMEs (which were not in-depth studies), a more comprehensive study should be carried-out to examine if a larger population of SMEs in Malaysia have a similar situation. Hence, based on the gap identified from the literature review in Chapter Three, and the findings of these two preliminary studies, five research questions were formulated as follows:

1. To what extent have SMEs in Malaysia adopted e-commerce i.e., what kind of e-commerce activities are used most by SMEs in Malaysia?

2. What are the internal factors that facilitate SMEs to adopt e-commerce i.e., what are the demographic characteristics of SMEs and their managers that have adopted e-commerce?
3. Do external factors, such as government support, facilitate the adoption of e-commerce by SMEs?
4. What are the reasons for e-commerce adoption and its benefits among SMEs in Malaysia i.e., what is the most important reason for adopting e-commerce and the benefits of doing so?
5. Why don't some SMEs adopt e-commerce, and what are their reasons for not adopting it?

The above research questions guide the researcher in conducting the main part of this research. In the following chapter a conceptual framework for the factors, reasons, benefits, and constraints, of e-commerce adoption, is developed.

CHAPTER 5

CONCEPTUAL FRAMEWORK

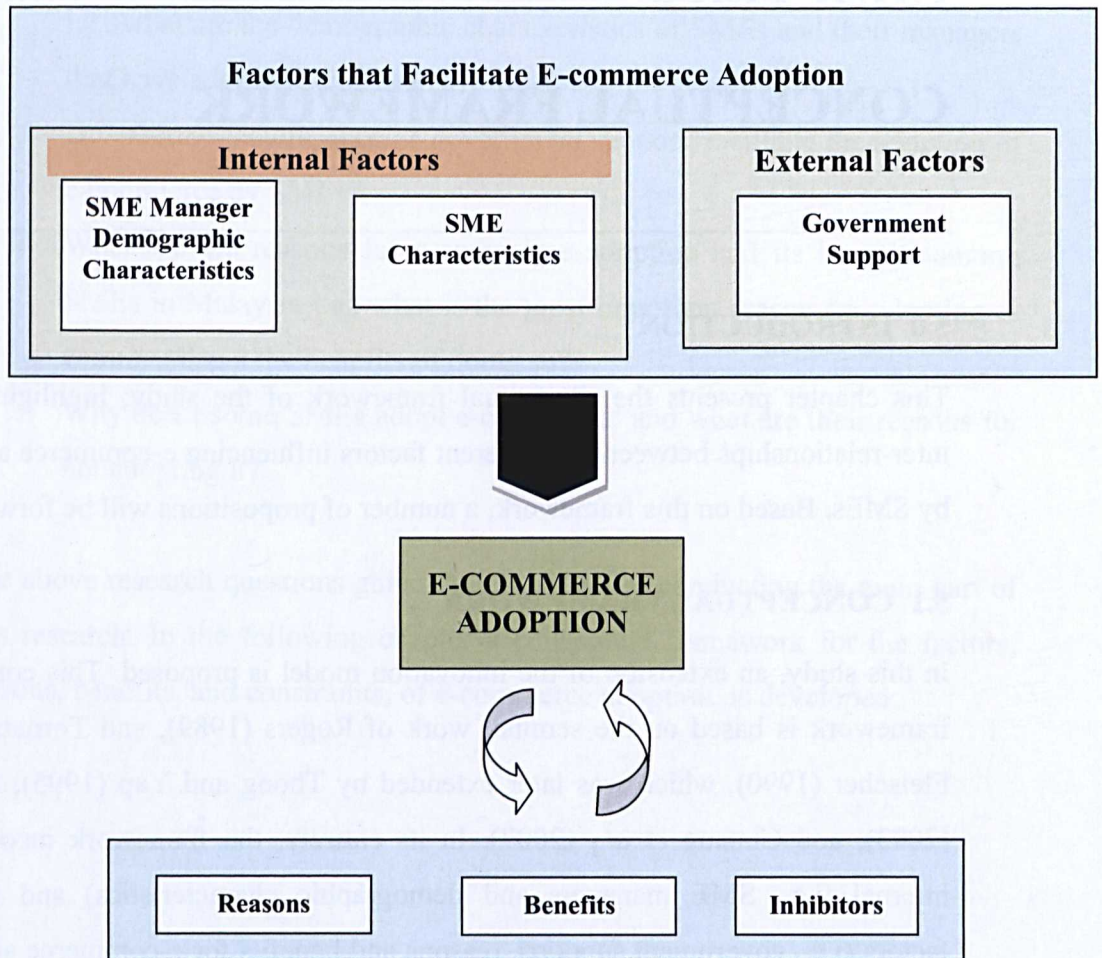
5.0 INTRODUCTION

This chapter presents the conceptual framework of the study; highlighting the inter-relationships between the different factors influencing e-commerce adoption by SMEs. Based on this framework, a number of propositions will be forwarded.

5.1 CONCEPTUAL FRAMEWORK

In this study, an extension of the innovation model is proposed. This conceptual framework is based on the seminal work of Rogers (1989), and Tornatzky and Fleischer (1990), which was later extended by Thong and Yap (1995), Scupola (2003), and Chuang *et al.*, (2007). In its entirety, the framework incorporates internal (i.e., SME managers and demographic characteristics) and external factors (i.e., government support), reasons and benefits for e-commerce adoption, and inhibitors of the adoption of e-commerce by SMEs. Figure 5.1 shows a graphical representation of the study's conceptual framework.

Figure 5.1: Conceptual framework of the study



5.1.1 Factors Influencing E-commerce Adoption

Innovative literature has identified many factors that influence organisations to adopt ICT (see Chapter Three). However, to understand this from a Malaysian context, a preliminary study was conducted. Based on telephone interviews and constant comparative analyses of literature, this study has identified twelve important factors influencing e-commerce adoption by Malaysian SMEs. More specifically, five factors describe the demographic characteristics of SME managers, five factors describe the characteristics of the SMEs themselves, and two factors describe government assistance for the external factors (as shown in Table 5.1).

Table 5.1: Factors influencing e-commerce adoption

Internal		External
SME manager demographic characteristics	SME demographic characteristics	Government support
<ul style="list-style-type: none"> • Level of education • Age • Experience overseas • Gender • Ethnicity 	<ul style="list-style-type: none"> • Types of industries • Location • Size • Age • IT resources 	<ul style="list-style-type: none"> • ICT assistance • E-commerce grant

Source: Literature review and preliminary findings

5.1.1.1 SME managers' demographic characteristics

Previous research on SMEs managers' demographic characteristics (e.g., Gartner *et al.*, 1992; Thong and Yap, 1995; Chuang *et al.*, 2007) underlines the need to include these variables as they (the SME managers) understand the factors critical to business success and the areas where innovation will gain the best payoff (DeLone, 1988). The SME managers also determine the business strategy, and decide what is best for the company (Thong and Yap, 1995). It is evident from previous literature that demographic characteristics of managers can influence the decisions made for the company (Chuang *et al.*, 2007). For instance, gender and age have shown some effect in decisions regarding organisational process (Kanter, 1977; Korae-Kakabadse, 1998; MacGregor and Vrazalic, 2007; Middleton and Byus, 2011). Although manager demographic characteristics are considered important in understanding how and why SMEs adopt e-commerce (Fillis *et al.*, 2004), up until now only a few ICT studies have investigated these relationships (Chuang *et al.*, 2007). Using the most relevant demographic characteristics in the Malaysian context (as determined in the preliminary study), this study investigates the association between the SME managers with level of education, experience overseas, age, gender, and ethnicity.

Level of education

Education can provide managers with the tools and knowledge they need in handling their businesses (Variyam and Kraybill, 1994). With education, managers can generate a wider range of creative solutions when faced with

complex problems (Karami *et al.*, 2006). Many researchers have found education to have a positive influence on technology adoption of firms (Igarria *et al.*, 1997; Chuang *et al.*, 2007; MacGregor and Vrazalic, 2007). Managers, characterised by a higher level of education, would adopt technology in their firms (Roberts, 1991).

Proposition 1: Level of education of SME managers influences e-commerce adoption.

Experience overseas

The benefits of living overseas are exposure to new languages, ways of thinking, and first-hand experience of other cultures (Schulz, 2001). Managers who had overseas experience were able to adapt ideas and concepts proven successful in the developed markets to their own countries, which in turn could bring more advantages to their firms (Rodriguez, 2005). Having overseas experience allows the SME managers to have broad understanding on handling businesses in foreign countries (Inkson *et al.*, 1997), thus encouraging them to be more open to e-commerce (Rodriguez, 2005).

Proposition 2: SME manager's experience living overseas influences e-commerce adoption.

Age

In general, the literature shows that the age of an SME manager is inversely related to ICT adoption; younger managers tend to be more optimistic, less worried by ICT and thus more likely to take more risks and be innovative compared to older managers (Ramayah *et al.*, 2003; Karami *et al.*, 2006). Younger managers tend to dominate the 'new economy', characterised by e-commerce, software, and creative businesses (European Commission, 2002). They are seen as ambitious and more concerned with the immediate trend (Karami *et al.*, 2006). Even though older SME managers tend to have greater management know-how, more resources and information sources, as well as more social networks than younger managers (Westhead *et al.*, 2001); such individuals may not have physical attributes of their younger counterparts. Therefore, the following proposition is suggested.

Proposition 3: SME manager's age influences e-commerce adoption.

Gender

Most findings have revealed that females have lower rate of usage and exhibit negative attitudes toward IT than males (Gefen and Straub, 1997). Teo and Lim (2000) reported that men feel more at ease with computers than women, while Ramayah *et al.* (2003) noted that males tend to use the Internet more often and had more positive attitudes than females. Jackson *et al.* (2001) reported that females have more computer anxiety, less computer self-efficacy, and less favourable computer attitudes.

In contrast, recent findings revealed that users exhibited positive attitudes toward the Internet regardless of gender (e.g., Chuang *et al.*, 2007; MacGregor and Vrazalic, 2007). Female users were found to spend as much time using the Internet as their male counterparts. Shaw and Gant (2002) also reported that no gender differences are detected in various online activities. For example, although women tended to buy more flowers from online vendors and men bought more computer hardware, the online shopping patterns for men and women were similar (Fram and Grady, 1997). In addition, Ono and Zavodny (2003) reported that the gender gap is disappearing as female users have equal chance to experience the Internet and derive valuable service from online activities. It is said that gender inequalities in Internet access and usage are vanishing (Chuang *et al.*, 2007). Since there are two conflicting findings in the literature, this factor is included so as to understand the influence of gender in adoption of e-commerce in Malaysian SMEs.

Proposition 4: SME manager's gender influences e-commerce adoption.

Ethnicity

Ethnicity can be considered as an important factor in determining ICT utilisation (Flamm and Chaudhuri, 2007; Middleton and Byus, 2011). In a recent study, Middleton and Byus (2011) found that there is a continuing digital divide on ICT adoption between Hispanic and Non-Hispanic SME owners/managers. The Non-Hispanic SME owners/managers were found to adopt a wider range of ICTs and

use them for both administrative and analytical purposes. The Hispanic SME owners/managers on the other hand, not only failed to adopt a full range of ICTs, but they were less likely to use ICTs for long-term strategic analyses (Middleton and Byus, 2011).

In Malaysia, ethnicity is clearly an important consideration when formulating support policies due to its multi-ethnic society (Mohd Osman, 2001). The Malaysian government has given more financial and technological support to Bumiputras (indigenous) than the Non-Bumiputra. Part of the reason is because the Non-Bumiputra, particularly the Chinese community in Malaysia has dominated the business scene and is superior in terms of business skills and technology development (Mohd Osman, 2001). On the other hand, the Bumiputras, which have lower income (Saari *et al.*, 2010) compared to the Non-Bumiputras, are lacking in financial and technological development. Thus, this study provides a good opportunity to assess whether government support has an influence on e-commerce adoption by Bumiputra SME managers compared to Non-Bumiputras.

Proposition 5: SME manager's ethnicity influences e-commerce adoption.

5.1.1.2 SME characteristics

As discussed in the preliminary study (see Table 5.1), five variables relating to SME characteristics will be considered as determinants of e-commerce adoption. These include types of industry, location, firm age, firm size, and IT resources.

Types of industry

The type of industry affects e-commerce adoption amongst SMEs (Jentzsch and Miniotas, 1999). For example, the travel and hospitality industry requires websites with online payment facilities to assist customers to purchase their tickets and accommodation (Heung, 2003). However, in the construction industry, the need for e-commerce is much less, since most deals are made face-to-face (Mallett, 1999; Daniel *et al.*, 2002). In Malaysia, manufacturing industry SMEs have always been given priority in receiving ICT support from the government, since this sector is the biggest contributor to the Malaysian economy (Abdul

Wahab, 2004). However, as the government's policy has directed their focus to the service sector, the issue of ICT adoption among SMEs is becoming crucial. Many studies have found that firms in the service industry adopt ICT more readily than firms in other industries (*Boyd et al.*, 2007).

Proposition 6: Type of industry influences e-commerce adoption.

Location

Firm location has both positive and negative influences on e-commerce adoption among SMEs. The main argument is that if SMEs are connected to the Internet, location becomes less important for e-commerce adoption, because SMEs can sell and buy online anywhere and anytime (*Lee and Park*, 2002, *Daniel et al.*, 2003). However, *Haig* (2002) argues that accessibility to e-commerce depends on where the SMEs are located. For instance, SMEs in London have two times as many websites as SMEs located in Yorkshire. In Malaysia, SMEs are located in fourteen states across the country, operating in industrial regions, small villages, and big cities. In the northern region, particularly Penang, many SMEs have access to the Internet, due to rapid industrial growth (*Ramayah et al.*, 2003). However, in East Malaysia (i.e., Sabah and Sarawak), most SMEs have the least use of e-commerce in their businesses, due to fewer basic access facilities (*Paytner and Lim*, 2003). Meanwhile SMEs located in industrialised regions, within the high-technology sector, adopt more ICT (*Mohd Osman*, 2001).

Proposition 7: The location of SMEs influences e-commerce adoption.

Firm size

Firm size influences the adoption of e-commerce. Larger firms are able to adopt new technologies, such as e-commerce (*Premkumar and Roberts*, 1999), and absorb risks related to technology development, economies of scale, and preferential access to capital markets due to more financial resources (*Davies*, 1979; *Karshenas and Stoneman*, 1995). They have more complex organisational structures and extensive internal requirements for ICT (*Premkumar and Roberts*, 1999); and therefore, a tendency to adopt more complex technologies than their smaller counterparts (*Ordanini*, 2006). In addition, previous studies have

confirmed that firm size has a positive impact on ICT diffusion (Davies, 1979; Karshenas and Stoneman, 1995; Premkumar and Roberts, 1999; Ordanini, 2006).

However, the earlier findings on the positive correlation between firm size and ICT adoption is not conclusive and has been challenged (Fink, 1998). Recent studies show that firm size alone is not necessarily a critical factor in Internet use (Lynn *et al.*, 1999; Karakaya and Khalil, 2004). The evidence from these studies found that smaller SMEs were also engaged in complex e-commerce activities, such as using the Internet for marketing intelligence, and having sophisticated websites (Lynn *et al.*, 1999; Daniel, 2003; Karakaya and Khalil, 2004).

Proposition 8: The size of SMEs influences e-commerce adoption.

Firm age

The evidence from the preliminary findings showed that firm age influences ICT adoption among Malaysian SMEs. Previous studies found that younger firms, with less technological experience, have a positive impact on ICT adoption (Dunne, 1994). This may be due to the lower adjustment costs in younger firms, with a more up-to-date capital stock (Dunne, 1994). However, Bertschek and Fryges (2002) found that there was no significant influence of firm age on e-commerce adoption among SMEs. This indicates that firm age influence on ICT adoption is mixed.

Proposition 9: Firm's age influences e-commerce adoption.

IT resources

Previous studies showed that there is a positive relationship between IT resources and ICT adoption (Ismail and King, 2007; Shiels *et al.*, 2003; Ndubisi and Jantan, 2003). Ismail (2004) classified IT resources in two forms, namely IT expenditure of a firm and IT skills of staff within a firm. SME firms with more IT expenditure tend to adopt more complex ICT (Shiels *et al.*, 2003; Ismail and King, 2007). In addition, the use of advanced systems is significantly related to the IT skills that a firm has, and how much money a firm invests in ICT (Ismail, 2004; Ndubisi and Kahraman, 2005). Furthermore, Ndubisi and Jantan (2003) found that computing

skills and technical backing are strong anchors that influence system use. Thus, the following propositions are forwarded:

Proposition 10a: IT expenditure influences e-commerce adoption.

Proposition 10b: IT skilled staff influences e-commerce adoption.

5.1.1.3 Government Support

Many innovation and SME studies suggest that the government plays an important role in facilitating ICT adoption among SMEs (Chan and Al-Hawandeh, 2002; Scupola, 2003; Costello and Moreton, 2009). This support is instrumental in e-commerce adoption, as most SMEs face financial constraints (Scupola, 2003). One way of assisting SMEs is to provide continuous financial support, in order to encourage SMEs to adopt ICT. The Malaysian government has assisted SME development by designing ICT schemes, particularly through e-commerce (The Eighth Malaysian Plan, 2001; Ninth Malaysia Plan, 2006).

Thus, SMEs that received government support should have already adopted e-commerce, or at least, have an operable website. However, findings from the preliminary study showed that this may not be the case. The reason for the lack of adoption amongst Malaysian SMEs is not clear, as no reports are available on the effectiveness of government support on e-commerce adoption among SMEs; particularly on those that received this government grant.

Proposition 11a: Government assistance influences e-commerce adoption.

Proposition 11b: Government grants influence e-commerce adoption.

5.1.2 E-commerce Adoption

As stated in Chapter 3, there are three main components of e-commerce: e-mail, websites (for online selling), and online buying as defined for this study. These three components have been used by many e-commerce researchers to investigate the intensity of e-commerce usages by SMEs (Daniel *et al.*, 2002; Fillis *et al.*, 2004; Pool *et al.*, 2006). The business activities occur in these three types of e-commerce components varies. Some SMEs use e-mail to communicate with their customers and suppliers. Some SMEs have website with online payment systems

installed, and some bought from other firms' website. The preliminary studies (discussed in Chapter 4) also indicated that most SMEs cited these three components as e-commerce. Thus, in line with other researchers, such as Daniel *et al.* (2002), Fillis *et al.* (2004), Grandon and Pearson (2004), Pool *et al.* (2006), and also the preliminary studies, this study will use the three types of e-commerce components to measure e-commerce adoption among SMEs: e-mail, websites (for online selling), and online buying. Using these three types of e-commerce components will allow researchers to understand what types of e-commerce components usually used by SMEs in Malaysia and to what extent they have used them.

E-mail

Five e-mail activities were used to explore the potential of e-mail usages among the SME managers. These activities include communicating with customers and suppliers, sending firm brochures to customers and suppliers, accepting customer orders, billing customers, and utilizing emails for personal use.

Website (to indicate online selling)

In order to explore the potential of SMEs selling online, six activities on the websites were chosen. These activities are as follows:

- providing contact details for the business (online brochureware);
- listing information about firm's goods and services, without listing the prices (online catalogue without prices);
- providing information about firm's goods and services with prices (online catalogue with prices);
- receiving customer inquiries about firm's goods and services, including price queries (online inquiries);
- receiving customer orders (online ordering); and
- receiving customer payments (online payment).

Online buying

Two activities of online buying were chosen to explore the potential of SMEs buying online: order goods and services from other firm websites, and pay for goods and services from other firm websites.

Table 5.2 displays the summary of the e-commerce components and the potential of each of the e-commerce component activities.

Table 5.2: E-commerce components and the potential of their uses

E-commerce components	E-commerce uses	Existing literature
E-mail	Communicating with customers and suppliers, sending firm brochures to customers/suppliers*, accepting customers' orders*, billing customers* and personal use*	Daniel and Wilson (2002), Daniel <i>et al.</i> (2002), Daniel and Grimshaw (2002), Daniel (2003), Seyal and Abd Rahman (2003), Teo and Yujun (2003), Yeung <i>et al.</i> (2003)
Website (for online selling)	Provide contact details for firm (online brochureware), provide information about firm's goods and services, but no prices* (online catalogue without prices), provide information about firm's goods and services with prices* (online catalogue with prices), receive customer inquiries about firm's goods and services, including their price (online inquiries), receive customer orders (online ordering) and receive customer payments (online payment)	Quelch and Klein (1996), Thelwall (2000), Poon (2000), Raymond (2001), Le and Koh (2002), Daniel <i>et al.</i> (2002), Daniel and Grimshaw (2002), Teo and Yujun (2003), Seyal and Abd Rahman (2003), Yeung <i>et al.</i> (2003)
Online buying	Order goods and services from other firm websites, and pay for goods and services from other firm websites	Daniel and Wilson (2002), Daniel <i>et al.</i> (2002), Daniel and Grimshaw (2002), Daniel (2003), Seyal and Abd Rahman (2003), Teo and Yujun (2003)

*Note: E-commerce uses with * - these activities were identified from the telephone interviews with the SME managers during the preliminary study.*

5.1.3 Reasons for, Benefits of, and Inhibitors of E-commerce Adoption

In addition to the facilitating factors, this study also looks into the reasons for firms to adopt or not adopt e-commerce in their businesses. Thus, as demonstrated in Figure 5.1, the next step is to investigate two situations: 1) if firms adopt e-commerce, why do they do it and what kind of benefits would they gain from the adoption?; and 2) if firms do not adopt e-commerce, why don't they adopt it and what inhibits them?

5.1.3.1 Reasons for and benefits of e-commerce adoption

As stated in Chapter Three, the extant literature provides very limited studies on reasons why SMEs adopt e-commerce. Thus, Quayle (2001) and Corbitt and Thanaskit (2002) studies are used as the basis for this investigation. Eight telephone interviews were carried out during the preliminary studies to have a basic idea of the current situation of e-commerce adoption among SMEs in Malaysia. It was found that four out of eight SMEs claimed that they adopted websites to enhance their company status and to impress their customers. The preliminary study also found that SMEs adopt e-commerce to 'qualify for government incentives' and believes 'a website is nice to have'. These reasons were later included in this study to examine if other SMEs have the same view and also to find out what the most important reasons are for SMEs to adopt website. Table 5.3 displays reasons found through the literature review and the findings from the preliminary study.

Table 5.3: Potential reasons for SME managers to adopt e-commerce

Reasons to adopt	Reported by
To lower cost	Daniel and Grimshaw (2002), Simpson and Docherty (2004)
To eye new business opportunities	Daniel and Grimshaw (2002)
To enhance company image	Abell and Lim (1996), Poon and Swatman (1998), Quayle (2002)
To qualify for government incentives/subsidies*	Obtained from the telephone interviews
To follow trend	Corbitt and Thanasankit (2002)
Website essential part of business	Corbitt and Thanasankit (2002)
A website is nice to have*	Obtained from the telephone interviews
To allow the company to trade internationally	Rodriguez (2005)
Pressure from customers	Mehrtens <i>et al.</i> (2001), Daniel and Grimshaw (2002)
Pressure from government	Teo <i>et al.</i> (1998), Scupola (2003)
Pressure from suppliers	Mehrtens <i>et al.</i> (2001), Daniel and Grimshaw (2002)
To compete with other companies websites (competitive pressure)	Premkumar and Roberts (1999), Mehrtens <i>et al.</i> (2001), Looi (2003), MacGregor and Vrazalic (2007)
To impress customers	Mehrtens <i>et al.</i> (2001), Scupola (2003), Rodriguez (2005)
To stay ahead of competitors	Daniel (2003), MacGregor and Vrazalic (2007)
Managerial enthusiasm	Poon and Swatman (1998), Teo <i>et al.</i> (1998)

Note: Potential reason to adopt with * - these activities were identified from the telephone interviews with the SME managers during the preliminary study

This study also determines the common benefits that SMEs gained after adopting e-commerce. A review of studies on benefits of e-commerce among firms showed that there is a mixed opinion among researchers about e-commerce; while some

are in favour of e-commerce and others have doubts over the real benefits of e-commerce to a firm. The preliminary study revealed that almost half of SMEs that had used websites in their businesses believe that they gained more customers. Eight potential benefits found in the literature to be relevant to the Malaysian context were used in the survey in investigating the benefits that SMEs gained from having a website. Based on the literature review and also the findings from the eight telephone interviews with SME managers, seven tangible and intangible benefits were identified (see Table 5.4).

Table 5.4: E-commerce benefits: A summary of research

Potential benefit reaped	Reported by
More customers	Rodriguez (2005)
Reduced operating costs	MacGregor and Vrazalic (2007), Stockdale and Standing (2004), Quayle (2002), Poon and Swatman (1998), Abell and Lim (1996)
Enhanced status	Rodriguez (2005)
Increased sales	MacGregor and Vrazalic (2007), Abell and Lim (1996)
Increased productivity	Mustafa and Beaumont (2004)
Market expansion	Daniel and Wilson (2002), Quayle (2002), Poon and Swatman (1998), Abell and Lim (1996)
Task accomplished more quickly – improve efficiency	Corbitt and Thanasakit (2002)

Source: adapted from MacGregor and Vrazalic (2007, p.162).

5.1.3.2 Inhibitors of e-commerce adoption

Research studies that have investigated the inhibitors of e-commerce adoption are few, particularly among SMEs. Inhibitors faced by firms include high investment costs and unfavourable financial conditions, shortage of highly-skilled workers, lack of ICT specialists, and insufficient ICT oriented training (Yap *et al.*, 1992 and Chapman *et al.*, 2000). Other inhibitors include information barriers (reflecting technological uncertainty) and managerial barriers, such as insufficient awareness of managers (Chang *et al.*, 2003).

In Malaysia, many researchers and practitioners, as well as the government are more interested to learn about factors that facilitate ICT adoption. As such, fewer studies are available on the inhibitors to ICT adoption. Thus, this study seeks to fill this gap to help understand the inhibitors to adoption of e-commerce by

SMEs. More importantly, the findings of this study will contribute to the understanding of e-commerce adoption among SMEs in developing countries, such as Malaysia. Based on the literature review and also the findings from the eight telephone interviews with SME managers, ten inhibitors were identified (see Table 5.5).

Table 5.5: Barriers to e-commerce: A summary of research

Barriers to e-commerce adoption	Reported by
Too costly	Fielding (1996); Lawrence (1997); Puro and Campbell (1998); Van Akkeren and Cavaye (1999); Riquelme (2002); Quayle (2002).
Concern about security of e-commerce	Puro and Campbell (1998); Hadjimanolis (1999);); Poon and Swatman (1999); Quayle (2002); Riquelme (2002)
Lack of IT expertise	Lawrence (1997); Van Akkeren and Cavaye (1999); Riquelme (2002); Quayle (2002); Chau and Turner (2002)
Lack of time to implement e-commerce	Lawrence (1997); Van Akkeren and Cavaye (1999); Walczuch <i>et al.</i> (2000)
Not relevant to business	Hadjimanolis (1999); Walczuch <i>et al.</i> (2000); MacGregor <i>et al.</i> (2010)
Unclear benefits	Quayle (2002), Gray (2006)
Lack of information on e-commerce	Lawrence (1997)
Lack trust e-commerce	Puro and Campbell (1998); Hadjimanolis (1999);); Poon and Swatman (1999); Quayle (2002); Riquelme (2002)
Lack of critical mass	Abell and Lim (1996); Hadjimanolis (1999)
Heavy reliance on government and external consultants	Lawrence (1997); Van Akkeren and Cavaye (1999); Chau and Turner (2002)

5.2 CONCLUSIONS

This chapter describes the conceptual framework of the study, thereby justifying the efforts devoted to this research. Generally, this study seeks to investigate the adoption of e-commerce in Malaysian SMEs – why some SMEs adopt e-commerce readily, while others do not. It incorporates the SME manager demographic and firm characteristics, the actual reasons for and benefits of e-commerce adoption, the constraints on e-commerce adoption, and also examines the government initiatives for SMEs to adopt e-commerce. The next chapter will describe the methodology employed in the present study.

CHAPTER 6

METHODOLOGY

6.0 INTRODUCTION

This chapter describes the design of the research, the collection, and the analysis of the data. The aim is to describe not only *what* activities were undertaken before, during, and after the empirical work was conducted; but also *how* the research was carried out, and *why* it was conducted in this particular way. The researcher soon discovered while performing empirical work, that some activities had to be conducted simultaneously, and some others had to be tackled consecutively. The researcher had to be flexible and adaptable to changing circumstances (though many were beyond her control) whilst maintaining focus. Any research activity is bound to face restrictions of time and resources. This situation is even more acute when the research consists of a large scale survey and interviews with policymakers and SME managers. Fieldwork was conducted independently and at a considerable distance from the researcher's place of study. Much of the time, the researcher needed to be in the Internet café to communicate. Outside Kuala Lumpur, Internet access was very limited.

6.1 EPISTEMOLOGICAL CONSIDERATIONS

The basic premise for the choice of methodology for research usually lies in the specific epistemology or research paradigm that is being used. The term 'epistemology' refers to philosophical beliefs about the way in which knowledge is constructed and ascertained – "how we know what we know" (Crotty, 1998). Positivism and interpretivism rely on quite different philosophical assumptions about the nature of knowledge, and demand considerably different approaches to research (Eldabi *et al.*, 2002).

The positivist views knowledge as 'hard', objective and tangible where a researcher adopts the role of an observer (Daft and Weick, 1984). A positivist

epistemology researcher tries to understand a social setting by identifying the individual components of a phenomenon and then explaining the phenomenon in terms of constructs and relationships between constructs (Crotty, 1998). This approach, therefore, encompasses a more quantitative method (Crotty, 1998).

On the other hand, the interpretivist views knowledge as personal, subjective and unique in nature which requires a researcher to become involved with his subjects (Daft and Weick, 1984). The interpretivist approach aims to produce an understanding of the social context of the phenomenon, the process whereby the phenomenon influences and is influenced by the social context and those who are directly involved with the phenomenon being studied (Cavaye, 1996). This approach encompasses a more qualitative method.

Data collection may be essentially quantitative or qualitative in nature. For example, data collected in the form of precise measurements of variables may be referred to as quantitative, whereas data collected in the form of loosely structured interviews may be referred to as qualitative (Creswell, 1994). Burrell and Morgan (1979) argue that quantitative and qualitative research methods are mutually exclusive because their underlying assumptions are seen as contradictory. However, this view has been criticised. According to Gable (1994) and Remenyi and Williams (1996), both quantitative and qualitative research methods should be seen as the ends of a continuum.

6.2 RESEARCH METHODS

6.2.1 Quantitative Methods

Quantitative methods have been called “the single most important information gathering invention of the social sciences” (Sekaran, 1992; Royse, 2004). They provide a quantitative description of a sample of a population, enabling the researcher to generalize the findings from this sample to the population (Fowler, 1998). They are used in many areas of human activity to study attitudes and perceptions (Leedy, 1993).

Researchers in different fields utilise quantitative methods to estimate proportions in the population, make specific predictions, and test associational relationships (Powell, 1997). Busha (1980) argues that quantitative methods, such as surveys are very appropriate for studying the degree to which trends, new developments, and innovations are anticipated, accepted, and utilised in organisations. Quantitative methods also rely on the measurement and analysis of statistical data, to determine relationships between one set of data and another (Eldabi *et al.*, 2002). The measurement of these variables may produce quantifiable conclusions.

6.2.2 Qualitative Methods

Qualitative research, on the other hand, is concerned primarily with process rather than outcomes or products (Creswell, 1994). One of the advantages of a qualitative investigation is to distill meaning and understand phenomena (Jones, 1997; Eldabi *et al.*, 2002). In this approach, researchers are more interested in acquiring an understanding of the natural setting of the phenomenon through observation (Daft and Weick, 1984; Irani *et al.*, 1999), for example, “how people make sense of their lives, experiences, and their structures of the world” (Creswell, 1994). This approach is most appropriate to answer the ‘why’ questions (Yin, 1994). Hence, direct and in-depth knowledge of a research setting is necessary to achieve contextual understanding (Yin, 1994). As a result, qualitative research methods are associated with ‘face-to-face’ contact with people in the research setting, together with verbal data and observations (Eldabi *et al.*, 2002, p.67). The objective of qualitative research is to describe social reality from the perspective of the subject, not the observer. It emphasises getting close to the subjects of study and that experience is a good way to understand social behaviour. Royse (2004) argues that qualitative researchers tend to use procedures that produce descriptive narrative data such as:

- *Observation* – the observer locates him or herself in unobtrusive places in order to view the behaviour, the social process, or the individuals of interest.
- *Personal interviews* – the observer may employ in-depth interviewing of informants. Open-ended questions are asked that allow the subjects to talk about experiences, concerns and views of their world.

- *Reading of personal documents* – letters, diaries, autobiographies, and photographic albums may be used as sources of information providing ‘insider’ views.
- *Participant-observation* – the researcher attempts to become fully immersed in the culture of those being observed by living alongside them and sharing their activities. The observer does what his or her subject do.

In spite of the strengths of qualitative research, this method also has inherent weaknesses. The main argument centres on generalisation. The extent to which qualitative research can be generalised beyond the confines of a particular case is always questionable (Miles and Huberman, 1984; Jones, 1997). One particular case is difficult to generalise to the whole population (Jones 1997). This is even more difficult when the responses are widely different and highly subjective (Creswell, 1994). However, the relative difficulty of analysing qualitative data does not invalidate the data, or the conclusions ultimately drawn (Eldabi *et al.*, 2002). This is because rules of logic applied to the verbal data enable the researcher to make sense of the evidence and to analyse the data appropriately (Eldabi *et al.*, 2002). Another disadvantage of using this method is that it tends to be very time consuming because many types of data are collected. Hence, the sheer volume of data obtained may overwhelm the researcher and thus inhibit data analysis (Tull and Hawkins, 1993).

6.3 RESEARCH DESIGN

In attempting to ascertain the most suitable research methodology for this study, the literature on ICT adoption has been reviewed. So far, there have not been many studies that have investigated e-commerce adoption in developing countries as offered in the developed countries. Table 6.1 display methods that have been used in the study of ICT adoption among SMEs, reporting the sample sizes, and commenting on the data gathering method.

Table 6.1: Summary of methods used in study of ICT adoption

Authors	Emphasis	Sample Size	Method used	Data gathering Method
Chau and Tam (1997)	An exploratory study of factors affecting the adoption of open system	89 organisations in Hong Kong	Quantitative	Survey Interviewed
Poon and Swatman (1999)	Exploratory study of small business Internet commerce (SBIC): development of SBIC model	23 Small businesses in Australia with fewer than 20 employees	Qualitative	Series of interviews of open-ended questions
Thong (1999)	Factors affecting IS adoption in small business	166 firms in Singapore with fewer than 100 employees	Quantitative	Postal Questionnaire
Mehrtens <i>et al.</i> (2001)	Exploratory study to determine factors that influenced the Internet adoption	7 firms in Australia with less than 200 employees	Qualitative	Unstructured Interviews
Raymond (2001)	Determinants of website implementation in travel industry	410 travel agencies in Canada with less than 200 employees	Quantitative	Survey questionnaire
Sadowski <i>et al.</i> (2002)	An exploratory study on strategic use of the Internet by SMEs	264 SME firms in Holland with less than 500 employees	Quantitative	Survey Interviews
Daniel <i>et al.</i> (2002)	Investigate how SMEs are adopting e-commerce through an exploration of the SMEs' level and sequence of adoption	766 SMEs in the UK with fewer than 250 employees	Quantitative	Mailed questionnaires
Windrum and Berangger (2002)	Exploration on the factors affecting the adoption of e-business technology by SMEs in UK	Printing companies in North of England with less than 75 employees	Case study	Unstructured interview
Daniel (2003)	Explores the issue of e-commerce integration in the United Kingdom SMEs	766 SMEs in the UK with fewer than 250 employees	Quantitative	Mailed questionnaires
Jones <i>et al.</i> (2003)	Exploratory study on adoption of Web-based commerce in small Tasmanian Firms	5 Tasmanian small firms	Qualitative	Structured interview and open format questions
Kula and Tatoglu (2003)	An exploratory study of Internet adoption and usage by SMEs in an	237 manufacturing SMEs in Turkey with less than 100	Quantitative	Survey questionnaire

	emerging market economy in Turkey	employees		
Lawson <i>et al.</i> (2003)	A study of factors affecting adoption of electronic commerce by Australian SMEs.	170 SMEs in SW Sydney and SE Melbourne, Australia	Mixed-method	Questionnaire survey and case study interviewed.
Lertwongsatien and Wongpinunwata (2003)	Determinants of e-commerce adoption decisions in SMEs in Thailand.	386 SMEs in Thailand fewer than 200 employees	Quantitative	Questionnaire distribution during SMEs seminar
Pollard (2003)	E-service adoption and use in small farms in Australia	75 small farm in Australia	Mixed-method	Structured interview and mailed questionnaires
Scupola (2003)	Investigate the drivers of e-commerce implementation in SMEs based on TOE frameworks	7 Small business in Italy with less than 250 employees	Qualitative	Semi-structured interview
Grandon and Pearson (2004)	Investigation the drivers of e-commerce adoption in SMEs in US	104 SMEs in US with less than 250 employees	Quantitative	Postal questionnaire
Adham and Ahmad (2005)	Investigation of the adoption rates of web site and e-commerce technology	562 Malaysian public listed companies	Qualitative	Website analysis
Alam <i>et al.</i> (2007)	Investigation of factors affecting e-commerce adoption	194 manufacturing companies in Malaysia	Quantitative	Postal questionnaire
Thi and Lim (2011)	Investigation of factors affecting the adoption level of collaborative commerce	109 Malaysian organisations	Quantitative	Postal questionnaire
Ordanini (2006)	Investigation of IT adoption and implementation in SMEs in Italy	725 SMEs in Italy with less than 250 employees	Quantitative	Postal questionnaire
MacGregor and Vrazalic (2007)	Investigation e-commerce adoption in SMEs in US, Sweden and Australia	500 SMEs in with less than 250 employees	Quantitative	Postal questionnaire

Table 6.1 summarises past studies of ICT adoption by SMEs. Both methods have been fairly used in such studies. Studies using combination of both methods are very limited despite the advantages it offers. Therefore, this study uses the combination of quantitative and qualitative methods to explore the issues of e-commerce adoption in Malaysian SMEs.

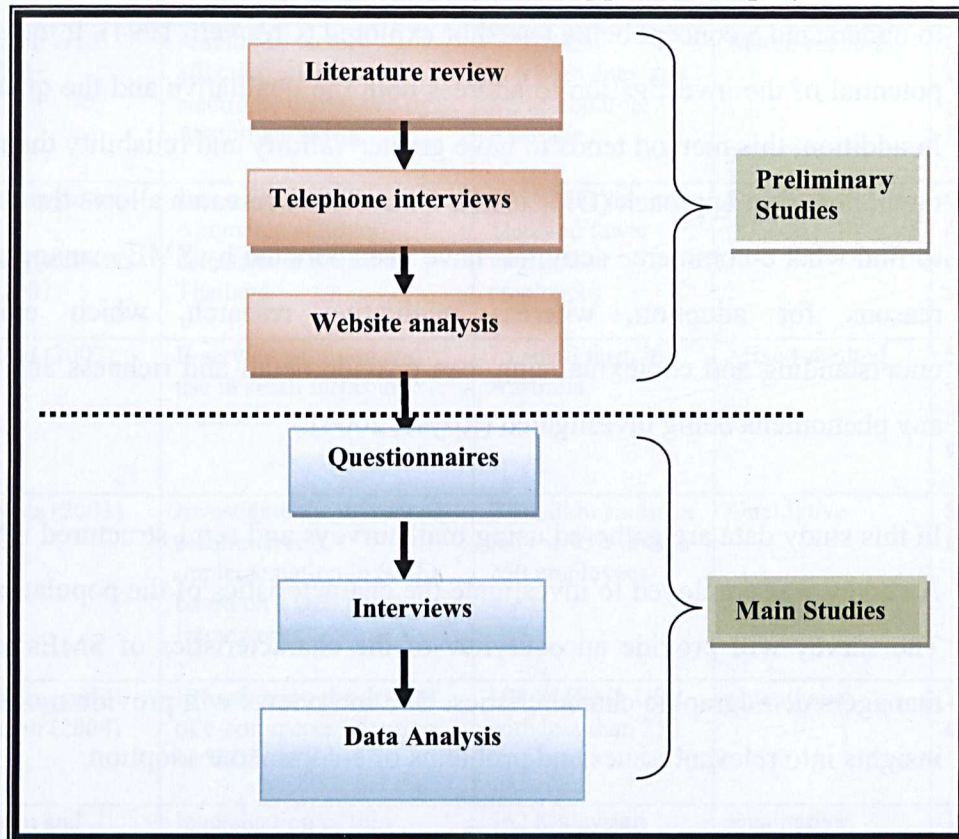
Research that combines methodologies is advantageous to the researcher seeking to understand a concept being tested or explored (Creswell, 1994). It increases the potential of the investigation to address both the qualitative and the quantitative. In addition, this method tends to have greater validity and reliability than a single methodological approach (Gill, 1997). Quantitative research allows the researcher to find what e-commerce activities have been adopted by SME managers and the reasons for adoption, whereas qualitative research, which emphasizes understanding and contextualizing, can provide detail and richness and depth to any phenomena being investigated (Royse, 2004).

In this study data are gathered using mail surveys and semi-structured interviews. A survey was employed to investigate the characteristics of the population group. The survey will provide an overview of the characteristics of SMEs and SME managers demographic characteristics. The interviews will provide more detailed insights into relevant issues and problems of e-commerce adoption.

6.4 RESEARCH PROCESS

The data for this study were collected in two main stages (see Figure 6.1). The first stage was the survey questionnaire. The survey is one of the most widely-used research techniques, particularly in social sciences (Pinsonneault and Kraemer, 1993; Burton, 2000). It helps the researcher to answer the 'what' questions. There are examples in the literature of the use of the survey as the most suitable method for a study that targets a large number of firms located in a wide geographical area (e.g., Daniel *et al.*, 2002; MacGregor and Vrazalic, 2007).

Figure 6.1: Scheme of research approach employed



Semi-structured interviews were carried out with policymakers in-charge of ICT and SMEs in the country, and SME managers who adopted and did not adopt e-commerce. Interviews are important to provide a thorough understanding of the most relevant concepts and detailed insights into the issues being studied (Greene *et al.*, 1989; Silverman, 1993; Creswell, 1994). They help the researcher to answer the ‘why’ questions. Interviews allow researchers to adapt questions when necessary, clarify doubts, and ensure that responses are properly understood (Scupola, 2002). This method also allows researchers to question policymakers and the managers closely on the major issues not covered in the questionnaire, such as the constraints and incentives encountered. It allows interviewees to talk freely about the subject, thus adding useful information from which it is possible to create new themes (Scupola, 2002).

6.4.1 The Survey

6.4.1.1 Questionnaire design

Based on the findings from the literature review and using information already gained in the two preliminary studies, a questionnaire was designed. The questionnaire was improvised after a thorough revision. One of the main concerns when developing the questionnaire was to keep it as clear and short as possible (Rodriguez, 2005).

Language

The questionnaire was drafted in English and was first reviewed by postgraduate research students at Sheffield Management School. Several attempts to translate the questionnaire to Malay were made. They were not satisfactory. Part of the reason is because there are so many words in English which have no synonym in Malay. Many ICT terminologies are in English rather than Malay. For example, e-commerce is well known among businesses, but not 'e-dagang'. Almost all the SME managers interviewed during the preliminary study were unaware of the word 'e-dagang'. Consequently, this researcher decided to use English for the questionnaire. Other researchers have used English in their questionnaires in studies of SMEs in Malaysia (e.g., Abdul Wahab, 2004; Ismail, 2004; Alam *et al.*, 2007). In addition English is widely used in business environment in the country.

6.4.1.2 Pilot testing

A large scale study of this nature uses a vast number of resources and is very time consuming. It needs to be well coordinated from the beginning. Therefore, it was essential to undertake a pilot study before initiating the final survey. The pilot study offered an opportunity to improve the survey process, take into consideration important details, and fine-tune the questions before the full survey was launched (Grover *et al.*, 1993; Dillman, 2000). The first working version of the survey was pre-tested by colleagues and also six senior members of the University of Sheffield and the National University of Malaysia for content and validity. This procedure addressed problems associated with grammar and structure, clarity of questions and general feedback. A second amended version of the survey was produced.

The second version of the survey was pilot tested with 50 SME managing directors and managers. These people were located in Malaysia and came from a variety of ethnic backgrounds, as it was important to confirm that respondents coming from diverse cultural and educational backgrounds had an equal understanding of the questionnaire. The name of the managing director, firm and its postal address were obtained from databases used in this study. The response rate was about 40%. Fourteen SMEs were known adopters of e-commerce, and the other six were known non-adopters. They were later removed from the sample list in order to avoid any pre-qualification bias that might have occurred.

The answers obtained from the pilot study were used to revise the content of the questionnaire. This resulted in further refinement of the survey instrument in terms of the complexity of questions and responses required, and options that were not originally considered (Goode and Stevens, 2000). The approach was to focus on the most important variables only. The questionnaire was reduced from sixteen to seven pages, with a clear and comprehensible layout and ample space between numbered questions, taking respondents 15 to 20 minutes to answer. The questionnaire consisted mainly of closed and objective questions with boxes provided for the selection of possible answers. The final version is provided in Appendix III. It consists of 32 questions and was divided into five sections:

- general firm data (the characteristics examined include firm sector, location, firm size, firm age, and firm IT resources);
- information technology of the firm (information regarding firm's IT – whether it uses computers, has IT staff, IT expenditure, and whether the firm has Internet access);
- e-commerce activities of the firm (three activities – e-mail, online buying and website (to indicate online selling) were used to examine types of e-commerce components used in a firm.
- government ICT funding (whether the firm has ever received any of government ICT funding);
- personal information (the characteristics examined include gender, ethnicity, age, education, and experience of living overseas).

6.4.1.3 Sampling procedure

The OECD defines an SME in terms of the number of full-time employees i.e., a firm with between 10 and 250 employees. This was the definition used in this survey. Firms were selected from the service sector and the manufacturing sector.

Malaysia has no centralised SME database that keeps information about all SMEs in the country. Some databases are maintained by public agencies and some by private firms involved with SMEs. Most of these databases are intended for use by interest groups.

Three of the most prominent databases in Malaysia were used as the sampling frame for this study, namely the SMIDEC (Small and Medium-sized Industry Development Corporation) database, the FMM (Federation of Malaysian Manufacturers) database, and the PIKOM (Association of the Computer and Multimedia Industry) database. These databases are the most reliable and up-to-date, and have been used by other researchers (e.g., Hashim and Wafa, 2002; Ismail, 2004; Alam *et al.*, 2007). While the firms on these databases can hardly be said to be representative of all SMEs in Malaysia, the database list includes a large number of SMEs, and are therefore, the best source of SME data in Malaysia.

The SMIDEC database provided a list of 1,818 manufacturing SMEs with an e-commerce grant from the government. The FMM database provided a list of 2,684 manufacturing and industrial service firms of various sizes. Their list is available commercially and updated annually. The listing in this database is restricted to those businesses that have paid to be listed in the directory. The PIKOM database provided a list of 643 ICT trading firms (both service and manufacturing) of various sizes in Malaysia. This database is available through the PIKOM website. Abell and Lim (1996) and Goode and Stevens (2000) made use of online directories to obtain their samples. All of these databases provided trading addresses, names of CEOs or managing directors, and number of employees. They are sorted alphabetically by firm name. Collectively, the number of organisations was 5,145. Data cleaning was conducted to ensure that there

were no overlapping SMEs on these three databases. From the 4,995 firms identified, only 3,585 firms fulfilled the SME's definition for this research. After removing the fifty firms that were used for the pilot study, the final sample number used in this study, is 3,535.

6.4.1.4 Respondents

The respondents were SME managers. The SME manager may be the CEO or managing director or the owner-manager, depending on the type of ownership of the firm (Rodriguez, 2005). The SME manager is a person who gives direction, vision and purpose to the firm. In the SME, the manager tends to be the main decision-maker, information gatekeeper, and the driving force of the firm (Macdonald and Williams, 1993; Thong and Yap, 1995; Raymond, 2001). The manager plays a key role in initiating the e-commerce activities of the SME (Poon, 2000; Santarelli and D'Altri, 2003).

6.4.1.5 Logistics of the postal survey

A total of 3,535 questionnaires were delivered by post to SME managers. Each firm was given an identification number. This code number was useful for organising the dispatch and receipt of questionnaires. Each letter was individually addressed to the SME managers and assured respondents of confidentiality, that neither his/her name nor that of the firm would be made public, and that the information given would be used for academic purposes only (see Appendix II). Each letter was printed on the letterhead of the University of Sheffield, and was signed individually by the researcher and a senior member of the Management School staff. Personalised letters stand out from the impersonal letters that SME managers often receive (Dillman, 2000). For further information and queries, e-mail, telephone and fax numbers were provided in the cover and reminder letters.

The questionnaire was sent in a 7 by 9 inch envelope that contained a cover letter, the seven page questionnaire and a folded, self-addressed and stamped envelope. The questionnaire was printed on A4 paper and folded to make an A5 brochure. To increase the response rate and make it more rewarding for participants, respondents were offered both the results of the research and the chance of

winning a year's subscription to business magazines (*the Economist* or *Business Week*). Two weeks after the initial mailing, reminders were sent by phone, SMS (short message systems), e-mail or postcard (depending on the contact address of the SMEs). Finally, one month later, a second mailing was sent to non-respondents.

6.4.1.6 Data analysis

Data analysis was carried out at different stages of the survey. A manual tally was kept to determine which firms had not returned the questionnaire. The first analysis gave a feeling of what the data looked like, and offered the opportunity to detect general trends and frequencies. The process of entering the data from responses lasted about 5 months. SPSS and MS Excel software were used.

A total of 547 responses was received (for an overall response rate of 15.5%). Of these, 18 were rejected because the questionnaires were incomplete. Hence, 522 useable responses (an effective response rate of 14.8%) are the basis for the findings of this study. The response rate is within acceptable range (between 7 and 25%) in Malaysia (e.g., Mohd Osman, 2001; Othman *et al.*, 2001).

Statistical analysis was conducted on the data collected from the 522 completed questionnaires. A test was conducted on each characteristic of the SMEs and the SME managers to determine whether it was normally distributed. Seven out of eleven SME and SME managers' characteristics did not show any evidence of being normally distributed. Thus, multivariate analysis, using techniques such as factor analysis and cluster analysis, were unsuitable for this study. Bivariate analysis, which is simultaneous analysis of two variables for the purpose of discovering whether they are related to each other, or independent of one another, was used instead.

One unresolved issue in data analysis is the question of when to use parametric or non-parametric techniques. According to Bryman and Cramer (1990) and Cramer (1996), non-parametric techniques should be employed if any of the following conditions apply:

1. the samples are not normally distributed. Non-parametric techniques do not make restrictive assumptions about the shape of the population (Levin and Rubin, 1994); or
2. the data are measured or analysed using a nominal or ordinal scale. A nominal scale is used only for identification, for instance, male or female in order to identify gender. The ordinal scale is used to measure variables whose values indicate ranking or order, for instance, very important to indicate the significant of the Internet. Most of the variables in the survey are measured using the nominal and ordinal scale except for firm size, manager's age, and annual budget for IT.

Because the data in this study satisfy both criteria above, the non-parametric techniques were used in the analysis of the survey in this study. One drawback in using the non-parametric approach is that the techniques are not as powerful as those used in the parametric approach (Motulsky, 1995). However, according to Motulsky (1995), non-parametric tests work well with large samples, whether or not the sample is normally distributed. The 'p values' tend to be a bit too large, but the discrepancy is small (Motulsky, 1995). Thus, large data sets, as in this study, present no problems for non-parametric techniques (Motulsky, 1995). Hence, non-parametric techniques were employed whenever necessary.

Since the survey is descriptive in nature, frequency (univariate analysis) and cross-tabulation were mostly used to analyse the data. Frequency was used to investigate the occurrences of a repeating event. It reports data in terms of percentages and proportions (Royse, 2004). A cross-tabulation gives the researcher a basic picture of how two variables inter-relate. It helps the researcher search for patterns of association (Royse, 2004). If certain cells contain disproportionately large (or small) numbers of cases, then this suggests that there might be a pattern of association. A cross-tabulation also helps to uncover new survey relationship insight and shows the researcher how different groups of survey respondents answer the questions (Sekaran, 1990). It represents the

grouping of survey responses into each possible pairing of the answers to the survey questions (Royse, 2004).

Frequency was used to investigate e-commerce usages among SMEs in the study. The percentage of each of the e-commerce component describe in Chapter 3 (e-mail, online buying, and websites (for online selling of products and services)) was recorded, follows by the percentage of each of the activity in the e-commerce components. Then, each of the variables in the characteristics of SME and SME managers were analysed to examine whether there was any association to the e-commerce components. As described above, cross-tabulation was carried out to test these relationships. Whenever there was an indication of an association between variables in the SME and SME managers' characteristics with the three e-commerce components, other cross-tabulation tests were carried-out with the website activities. If there were two or more groups to examine, Mann-Whitney and Kruskal-Wallis tests were carried out.

6.4.1.7 Response bias

Determining non-response bias in survey methods is not easy, and often only approximations can be made (Dillman, 2000). A variety of approaches have been used to deal with response bias. Some suggest comparing the composition of respondents and non-respondents (e.g., Lambert and Harrington, 1990), and some compare the composition of earlier respondents and later respondents (e.g., Goode and Stevens, 2000) in relation to characteristics relevant to the study. If no significant differences are observed between the two groups, the absence of response bias is inferred. If significant differences are observed, a note of caution should be included in the conclusions to account for possible bias (Lambert and Harrington, 1990).

This study adapts the approach of Goode and Stevens (2000) in determining response bias by comparing later respondents with earlier respondents. The date of receipt of each returned questionnaire was noted. The respondents were divided into two groups, according to the date of response in relation to mean response date. The groups were then compared in terms of manager and firm characteristics. A t-test analysis was carried out.

Table 6.2: Results of t-test between early and late responses

Variables	Observed significance level	Significant at 95% level?
Age of managers	0.701	Not significant
Education level of managers	0.167	Not significant
Ethnic background	0.537	Not significant
Gender	0.453	Not significant
Overseas experience	0.196	Not significant
Firm size	0.657	Not significant
Sector	0.690	Not significant
Location	0.131	Not significant
Firm age	0.332	Not significant
Firm structure	0.832	Not significant

Lambert and Harrington (1990) argue that a researcher should exercise caution in generalising results from the respondent sample to the entire population when response bias is present. However, the results show that none of the key variables tested produced significant differences (at the 95% level of significance) between the early and late respondents ($p > 0.05$). This suggests that the study is free from response bias, which allows the researcher to generalise results from the sample to the survey population.

In Malaysia, it is never clear whether SMEs are independent entities, part of a business group, or subsidiaries of other firms. The definitions of SMEs in Malaysia are based only on number of employees and annual turnover, not on ownership (Hashim and Wafa, 2002; Ndubisi and Saleh, 2006). It was not possible to eliminate subsidiary SMEs from the survey. Other researchers also make use of SMEs in subsidiary firms in their samples (e.g., Abdul Wahab, 1996; Ismail, 2004; Ordanini, 2006). In line with other studies of SMEs in Malaysia, the researcher is of the opinion that the inclusion of all SMEs would not affect the achievement of the research objectives of this study. Part of the reason is because a very small proportion of SMEs (not even 10% - only 51 SMEs) claim that they have parent firms. Statistical tests were carried out to find out whether there was any significant difference between subsidiary firms and independent firms in the major research variables (38 variables). The detailed results are presented in Appendix IV. A Mann-Whitney test reveals that none of the variables tested produced significant differences at the 95% significance level between

independent and subsidiary firms. Although there may be a possibility that biases exist because subsidiaries are likely to be networked, the result of the 38 variables tested at the 95% level of significance shows that there is no bias between these two group of firms. Thus, the result of these findings can be generalised to the whole survey population of SMEs regardless of whether they are subsidiaries.

6.4.2 The Interviews Process

The semi-structured face-to-face interviews were carried out from October 2006 to February 2007 with both SME managers and the government officials. In some cases where the respondents were not available for face-to-face interviews, telephone interviews were carried out. This procedure has been conducted before by other researchers (e.g., Abdul Wahab, 1996). The semi-structured interview was selected as it allows respondents to talk about their opinions on a particular subject. The objective is to understand the respondent's point of view rather than make generalisations about behaviour. Most of the time, the focus of the interview was decided by the researcher. Open-ended questions were raised and some arose naturally during the interview. This allowed some areas to be explored in more detail.

While conducting the interview sessions, the researcher tried to build a rapport with the respondents to create a comfortable and conversational environment. The same questions were asked in different manners using varied phrases to allow for further probing. Quite often the conversations were diverted from the interview guide when the respondents raised interesting issues, such as political or business environment issues. Since the intention of the interviews was to gain a deeper understanding on e-commerce adoption and/or non-adoption, these issues were included as they help interpret the findings. Most of the time, questions were asked when the researcher felt it was appropriate to ask them. Conducting semi-structured interviews had assisted the researcher to obtain rich feedback from the respondents as suggested by Yin (1989). However, this method consumed a lot of time and efforts, which include both the interviewer and interviewees (Macneally, 1997).

In conducting the interviews, the semi-structured 'interview guide' (Flick, 2002) was designed in English. However, both researcher and respondents conversed in mixed languages, Malay and English. In Malaysia, it should be noted that Malay language, or *Bahasa Melayu*, has been the country's sole official language since 1969, but English is widely used because of the influence of the British colonial era and for businesses (Malaysia, 2008a). Many Malay words have become part of common usage in informal English and *vice versa*, thus interchanging Malay and English is common in the country (Malaysia, 2008a). In some situations, some English or Malay words may not be able to fully describe the real situation, hence it was more appropriate to use mixed languages to obtain clear and detailed information. This is one of the advantages in using the interview method in non-English countries, as long as the interviewer has a background in the native language.

6.4.2.1 Interviews with the SME managers

Based on the returned survey, the SME managers were chosen randomly from the list of respondents. The process of choosing the respondents was carried out using these steps:

1. Those respondents were divided into two groups:
 - Group A: e-commerce adopters were classified into three categories - those who have e-mail, buy online, and have a website; and
 - Group B: non-adopters were classified into four categories - did not use the Internet in their businesses, did not use e-mail, did not have websites and did not buy online.
2. Group A and B were then divided into two further groups: those who had received an e-commerce grant and those who had not. Thirty respondents with and without e-commerce grants were identified from Group A. Forty respondents were identified from Group B. More non-adopters than adopters were selected because the non-adopters fall into more categories than the adopters.
3. Respondents were contacted to arrange the interviews. Most of the time, e-mail was used to communicate with the respondents. Telephone calls and SMS were used for those respondents without e-mail. Thirty-five agreed to

participate initially. However, seven decided to withdraw prior to the interviews. Finally, twenty-eight interviews were carried-out with SME managers. Of the twenty-eight, ten were adopters of e-commerce and eighteen were non-adopters. This number is justified as previous researchers have between four and ten respondents to gather their qualitative data (e.g., Iacovou *et al.*, 1995; Scupola, 2003).

These steps had facilitated the researcher in conducting the interview process. Table 6.3 shows the characteristics of the selected firms. To maintain confidentiality, each firm was assigned a code.

Table 6.3: Firms selected for interviews

Firm	Type of firm	Number of full-time employees	Age of firm	Received government grant	Products and services
I	S	80	9	Yes	E-commerce solution
II	M	65	11	Yes	Food and beverages
III	M	210	20	No	Financial services
IV	S	45	10	No	Biometric and high technology
V	S	15	5	No	Media publishing and event management
VI	M	100	12	Yes	Health products packaging
VII	M	50	43	No	Fruit and vegetable packaging
VIII	O	26	8	No	IT solution industry
IX	MS	18	14	Yes	Computer servicing
X	MS	34	6	No	Exhibition design and construction
A	M	20	19	No	Food and crackers
B	M	100	21	No	Coconut and palm industries
C	M	20	15	No	Bakery products, shortening and star fruit
D	M	20	12	No	Beverages
E	M	50	20	Yes	Plastic motor components
F	M	30	17	No	Automobile manufacturing
G	M	60	18	No	Elastic bands, knit tape, narrow fabric accessories
H	M	30	11	No	Electronic alarm system and engineering services
I	M	70	15	Yes	Wooden rubber wood furniture
J	M	15	19	Yes	Motorcycle spare parts and accessories, motorcycles

K	M	80	20	No	Building manufacturing
L	M	16	15	No	Agricultural products and chemicals
M	S	30	11	No	Imaging technology
N	S	45	8	Yes	IT infrastructure and system integration maintenance
O	MS	35	10	No	Gold and jewellery services
P	MS	15	15	No	IS and IT consultancy, and executive desktop
Q	MS	60	13	No	Health and food supplements
R	O	200	9	No	Building and constructions

Note:

- M:** Manufacturing
- S:** Services
- MS:** Manufacturing and Services
- O:** Others
- I – X:** E-commerce adopters
- A – R:** Non-adopters of e-commerce

Based on the questionnaire responses, the semi-structured interview guide was developed, focusing on the following issues:

- What do you understand by e-commerce?
- Why has your firm adopted, or not adopted e-commerce?
- What has constrained your adoption of e-commerce?
- How has your firm adopted e-commerce, and what are the benefits?
- Does your firm sell or buy online? Why?
- Is government policy for e-commerce appropriate for SMEs? Does it benefit SMEs?
- What do you want from the government?

6.4.2.2 Interviews with the government officials

Interviews with government officials were carried out after the interview sessions with the SME managers. The objective of these interviews was to explore ICT policy; particularly e-commerce policy. Some of the issues that needed exploration included the role of the government in supporting ICT among SMEs, and how SMEs are made aware of the availability of various incentives.

To ensure an acceptable number of interviews with government officials, the researcher attended two conferences and one ICT strategic seminar, organised by the government. The researcher was lucky, because she was acknowledged for her presentation during one of the conferences. This allowed the researcher to approach the government officials to request their business cards. Twelve government officials, from seven government agencies responsible for SMEs and ICT, finally agreed to be interviewed. Four were directors (D1, D2, D3, and D4), seven were assistant directors (AD1, AD2, AD3, AD4, AD5, AD6, and AD7), and one was a vice president of a government agency (VP) (see Table 6.4).

Table 6.4: Government officials interviewed

Code	Position	Organisation
VP	Vice President	MOSTE
D1	Director	MSC
D2	Director	KTAK
D3	Director	MITI
D4	Director	SMIDEC
AD1	Assistant Director	EPU
AD2	Assistant Director	MATRADE
AD3	Assistant Director	MSC
AD4	Assistant Director	KTAK
AD5	Assistant Director	MOSTE
AD6	Assistant Director	MITI
AD7	Assistant Director	SMIDEC

The respondents were top government officials, and therefore, they were quite inclined towards their own projects. Many of them were pleased with what they had achieved and talked positively about their initiatives. However, with a confidentiality assurance from the researcher, that the interviews were for academic purposes only, and given the informal environment of the interviews (some interviews were conducted outside office hours and in public places), some of the respondents were quite open to discuss their dissatisfaction with their own projects.

Based on the convergent findings of the government ICT policy literature, and information gained during conferences and interviews with the SME managers, a list of questions was developed to explore the government's role in encouraging SMEs to adopt ICT. These questions were asked during the interviews with the government officials:

- What has the government done to encourage SMEs to adopt ICT; particularly e-commerce?
- Why does the government encourage SMEs to adopt e-commerce?
- Is the policy appropriate to e-commerce adoption and does it benefit SMEs?
- Have the e-commerce policies for SMEs succeeded?
- What are the government's plans to boost ICT; particularly e-commerce among SMEs?
- How does the government evaluate policies for ICT; particularly e-commerce?

Altogether, 40 semi-structured interviews were carried out, involving 12 government officials and 28 SME managers. Each interview lasted between 45 minutes and 2 hours. All interviewees were given an assurance that their feedback would be treated confidentially. Therefore, the names of individuals and the firms involved in were disguised. All interviews were tape recorded using a digital recorder, and were then self-transcribed. Quotes that were relevant to issues being studied were selected. Since most of the conversations were in mixed languages i.e., Malay and English, the quotes selected were translated into English. To ensure reliability of the data, qualified language academic staff at the English and Malay Language Department of the National University of Malaysia verified both the original transcripts and the translated versions.

As anticipated, the biggest problem was to contact the government officials and SME managers, in order to arrange the interview sessions. Interviews were often seen to be intrusive, particularly on issues pertaining to government policies. However, the 'rule of thumb' adopted by the researcher to gain access to

organisations was to combine 'strategic planning, hard work, and luck' (Van Maanen and Kolb, 1985; Mohd Osman, 2001).

6.5 SUMMARY

This chapter described the overall approach to the research process and explained the chosen methodology. As the study aims to explore e-commerce adoption, both quantitative and qualitative methods were used i.e., a questionnaire survey was used to obtain descriptive and quantitative data, and interviews, to provide detail. This chapter also explained the design of the study and the methods of data collection. The two-phased approach, including both survey and semi-structured interviews with the SME managers and government officials, was explained. The following chapters will present the findings of the study, organised according to the research questions.

CHAPTER 7

FINDINGS I – E-COMMERCE ADOPTION AND USAGES

7.0 INTRODUCTION

Chapters 7 to 11 display the results for the survey and the interviews. Each chapter focuses on a specific research question, displayed at the end of Chapter 4. A descriptive analysis of the survey data is presented. Whenever possible, crosstab analysis was carried out to see if there is any pattern association. Quotes are presented to answer some of the 'why' questions and to support the findings of the survey. Quotations are largely from the interviews with SME managers, though some of them are from their comments in the survey. The source is made clear throughout.

This chapter presents the findings of the first research question of this thesis, i.e. to what extent have SMEs in Malaysia adopted e-commerce - what kind of e-commerce activities are mostly used by SMEs in Malaysia. This chapter starts by discussing the general features of the Internet and the three components of e-commerce adopted by SME managers in this study. Subsequently, it looks at the business activities used by SME managers based on each of the e-commerce components. Data for this chapter were obtained mainly from the survey, and quotations are from the interviews with SME managers, and also from their comments at the end of the survey.

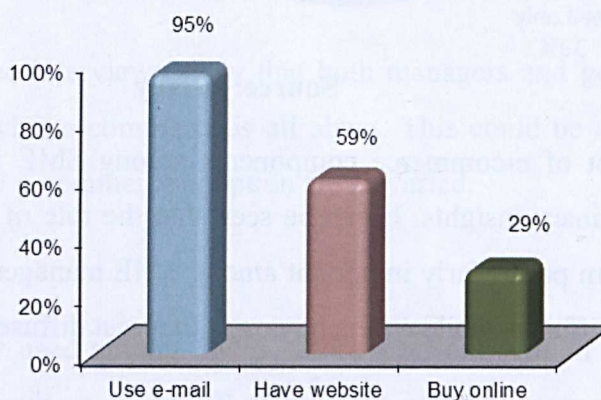
7.1 GENERAL FEATURES OF INTERNET AND E-COMMERCE DIFFUSION AMONG SMES

A total of 3,535 questionnaires were sent to SMEs in Malaysia. 547 SMEs returned the questionnaire, but only 522 SMEs (14.8%) questionnaire were found to be useable for the data analysis. Surprisingly, of the 522 respondents, 514

(98.5%) have an Internet connection and almost three-quarters of them were using the Internet for the past ten years. This indicates that most SMEs in this study are aware of the Internet. More than 70% of these SMEs claim that the Internet is either 'very important' or 'important' in their business. Broadband (which is usually called 'streamyx' in Malaysia) is widely used to access the Internet (used by more than 80% of the respondents).

522 SMEs participated in this survey. Of these, 497 (95%) use e-mail in their businesses. However, only 309 have websites (to indicate online selling) and only 149 (29%) have ever bought online (see Figure 7.1). As expected, the most widely diffused activity is e-mail.

Figure 7.1: E-commerce usage among respondent SMEs (n=522)



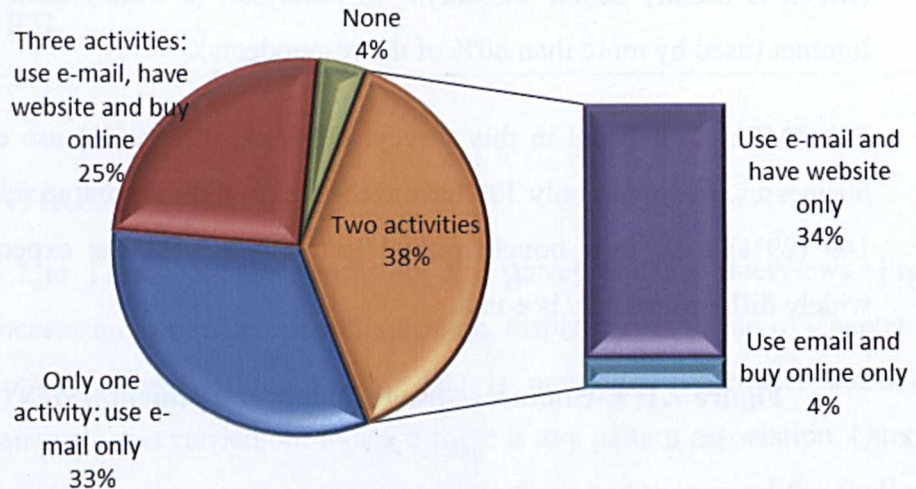
Source: survey

Almost 60% of respondent SMEs have websites. Of these, more than three-quarters have had their websites between three and eight years. Online buying is the e-commerce application least used by SME managers – less than 30% have ever bought online.

Of 522 SMEs participated in this study, three SMEs do not use a computer at all. Five SMEs have computers, but do not have access to the Internet. Fourteen SMEs have access to the Internet, but do not conduct any e-commerce activity. So, this means that 4% of the SMEs in this study are non-adopters of any of the e-commerce components. 33% of firms have adopted only one e-commerce component; in all cases, e-mail. More than three-fifths of the SMEs have integrated at least two e-commerce components in their firms. Only one quarter of

the SMEs in this study have integrated all three e-commerce components in their businesses (see Figure 7.2).

Figure 7.2: E-commerce components adopted by respondent SMEs (n=522)



Source: survey

The snapshot of e-commerce components among SME in this study provides some preliminary insights. It can be seen that the rate of e-commerce diffusion does not seem particularly important among SME managers in this study. E-mail is the most diffused, while online buying is the least diffused pattern of adoption.

7.2 E-COMMERCE ACTIVITIES OF SMES IN THE SURVEY

There are 497 SMEs (95%) which use e-mail in their businesses, 309 (59%) have websites, and only 149 (29%) have ever bought online. Only 40% of SMEs in this study claim to have adopted e-commerce. Many SME managers in the survey communicate with customers and suppliers using e-mail (96%), and they sometimes take orders (58%) and send invoices (22%) using this medium. However, they do not regard e-mail as e-commerce. Some interviewed respondents stated that they buy and pay online, but claim they are not using e-commerce. Some have websites, but do not see this as e-commerce. Some regard browsing the Internet as e-commerce. Many still do not really understand what e-commerce is all about, including Malaysian government officials in this area:

"I don't know what e-commerce is. I might not be the right person to answer this survey."

SME managing director (survey)

"We use a lot of e-mail in our firm, but rarely update our website. We even take orders using e-mail; of course, it is from our regular customers. Is that considered e-commerce as well?"

SME manager from firm I

"My firm has a website. But we never do e-commerce. We never sell and buy online."

SME manager (survey)

"Our SMEs have used a lot of e-commerce. They now have the Internet in their office. We communicate with SMEs using e-mail now."

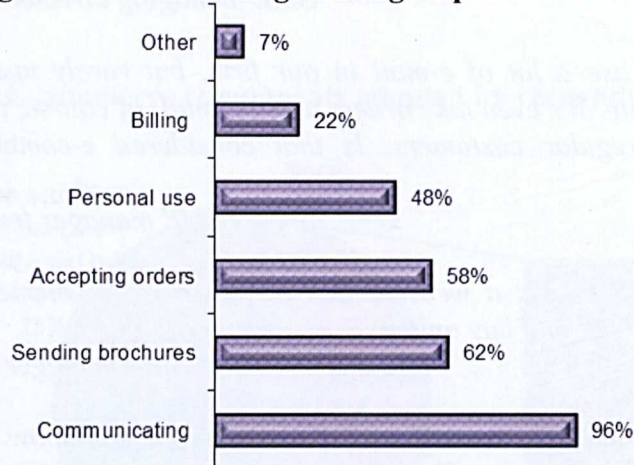
Director of government agency D

The results of the interviews show that both managers and government official were uncertain what e-commerce is all about. This could be one of the reasons why stories about e-commerce adoption are so varied.

7.2.1 E-mail

E-mail is widely used among SMEs. More than one-half of the SMEs in this study have been using e-mail for the past eight years. On average they have been using e-mail for 7 years. The most important e-mail usage is communicating with customers/suppliers (96%), followed by sharing business information, say by sending brochures to customers/suppliers. The bar graph below presents the breakdown of e-mail usage among 497 SMEs.

Figure 7.3: E-mail usage among respondent SMEs (n=497)



Source: survey

Figure 7.3 shows that many managers consider e-mail as an important means of communication nowadays. 20 out of 28 managers interviewed claimed that e-mail is very common nowadays and is extensively used in their businesses. They communicate with employees, customers and suppliers using this medium. Some send brochures and promotional material to customers, and exchange documents with suppliers and stakeholders. However, the interviews also revealed the level of managers' confidence in using e-mail to deal online business with both customers and suppliers increases only after initial face-to-face interaction. It is interesting to find that many SMEs use e-mail to accept customers' orders (58%). Some (22%) have started using e-mail to send invoices to their customers.

"We use a lot of e-mail in our firm. But we need to see our customers and suppliers first before we carried-out the business online."

SME manager from firm I

"I think e-mail is convenient. It is so good that our customers have started using e-mail to order with us. However, at the moment we only deal with our regular customers."

SME manager J

"We only take orders from our regular customers. For new customers, we usually ask for their contact number. We contact them first by phone to make some arrangements. Usually, these customers need to pay us first before we proceed with the delivery. Sometimes we allow COD (cash on delivery)."

SME manager from firm VII

“Bills? Do you mean invoices? We send invoices via e-mail attachments. Customers need to pay through our bank account and fax the copy of their receipt before we proceed with the delivery.”

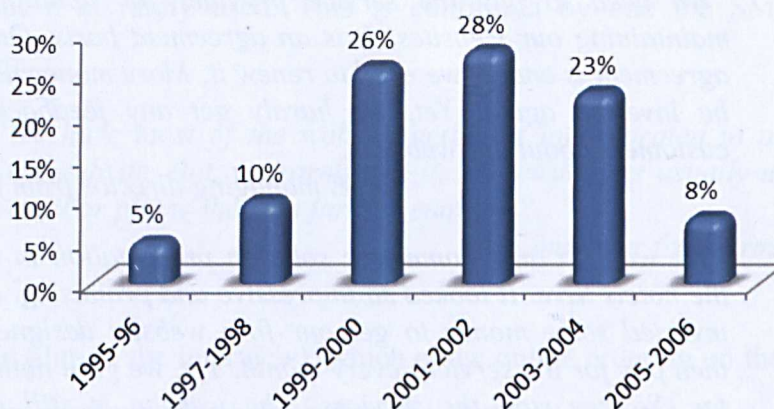
SME managing director from firm IX

7.2.2 Websites

7.2.2.1 Website adoption

309 of the survey respondents (almost 60%) state that their firms have websites. Of these 60%, more than four-fifths have had websites more than ten years (see Figure 7.4). Most SMEs in this study had their websites installed between 1999 and 2002. Interestingly, the rate of SMEs installing websites declined after 2002. Only 8% of these SMEs installed websites between year 2005 and 2004.

Figure 7.4: Year SME websites installed (n=269)



Source: survey

Over 80% of these 309 SMEs claim that they update and maintain their websites. However, only 9% update their websites at least weekly. Many state that they update their website whenever possible (56%). Almost 20% rarely update or maintain their websites.

“We have our own webmaster. We update our website almost every day. We are the e-commerce solution company, so we need to show our customers that our website is up-to-date.”

SME managing director from firm I

“Of course we update our website. We have a special staff to update our website.”

SME managing director from firm V

“Why bother to update or maintain the website so often? We have included all the information required by our customers about our firm. We only have it updated if it is necessary to do so.”

SME managing director from firm IX

“We don’t see the relevance of updating our website frequently. We don’t have time to do that. Do you think we should?”

SME manager from firm IV

Only about 30% of these SMEs have an in-house webmaster to update and maintain their firm websites, and not even 10% have ever employed a web designer. Interestingly, most SMEs (almost 50%) outsource their websites to someone else for updating and maintenance. This could be one of the reasons why SME websites are rarely updated.

“We need to pay the service provider for updating and maintaining our websites. It is an agreement basis. Once the agreement is ended, we need to renew it. More money needs to be invested again. Yet, we hardly get any feedback from customers about our websites.”

SME managing director from firm IX

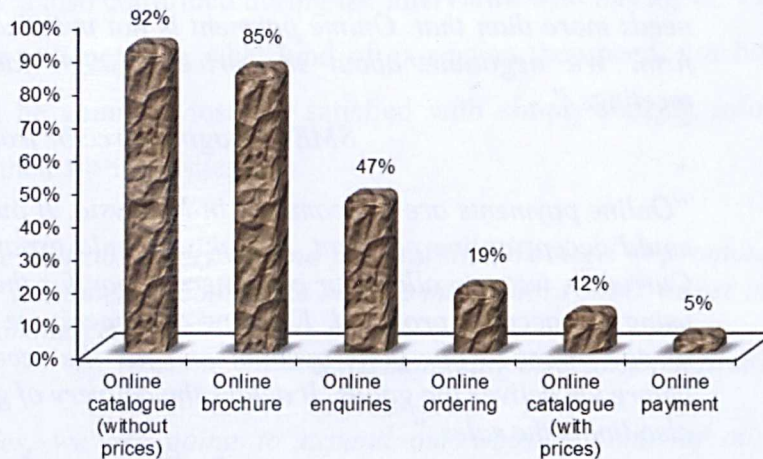
“We went to an e-commerce solution presentation in one of the hotels here. It looked so impressive and promising. So, we invested some money to get our firm website designed. We then pay for the services every month. Yet, we gain nothing so far. So, we stop the services. The website is still on the Internet; it has not been updated for more than a year now.”

SME manager from firm III

7.2.2.2 Website Activities (to indicate online selling)

Though many of these SMEs have had websites for more than 3 years (almost 90% of those with websites), they are used for little more than providing contact details for the firm and information about the firm’s goods and services. Figure 7.5 shows the breakdown of website activities of these Malaysian SMEs.

Figure 7.5: Website activities of SMEs (n=309)



Source: survey

Twelve percent of SMEs are willing to put the price of their goods and services on their websites. Almost half of the SME websites offer an online enquiry service, but it is rarely used. This is confirmed by one the SME manager interviewed.

“We have most of the website activities incorporated in our firm website. But, we rarely use it. The customers usually use e-mail or phone the firm for any enquiry.”

SME manager from firm X

Four SMEs (during the interview), which allow online ordering on their websites require their customers to phone before they proceed with the order. They claim that information on their websites is not detailed enough for customers. They need to explain the product to customers and say when it can be delivered. This is important if orders are not to be returned.

Only five percent of respondents accept online payment. Online payment seems to be the least popular form of e-commerce. More than half of SME managers interviewed claimed that websites with online payment systems were not appropriate to them:

“I don’t think our people are ready for online payment yet. So there is no point me investing in the online payment system yet.”

SME manager from firm IV

"I have put everything that the customers need to know about our firm and products on our website. I don't think my firm needs more than that. Online payment is not practical for our firm. We negotiate about the price through face-to-face meetings."

SME managing director from firm IX

"Online payments are not common in Malaysia. If our website could accept online payment, I think we could expand better. Currently, we only allow our customers to pay for their orders using the account provided. For new customers, we ask them to pay direct to our bank account and fax the receipt to us before we deliver the goods. It delays the delivery of goods and also limits the sales."

SME manager from firm VI

"We have an online payment system on our website. We only accept credit cards from the major financial institutions, but we charge the customers 1.5% of the total amount. We also need to pay the financial institutions for the services every month. It is quite costly. But some of our customers need this service. So, we just maintain it as it is."

SME manager from firm I

The survey and the interviews show very few SMEs have online ordering, online catalogue with prices display, and online payment facilities installed in their website. This indicates that selling through the websites is not very popular among SMEs in this study.

7.2.3 Buying Online

Only 149 SMEs (29%) in this survey buy online. Almost 90% of the SME managers have placed an order online; however, only 82 of them (55%) have ever paid online. Four managers interviewed say they are reluctant to pay online for security reasons. They are worried about displaying their credit card numbers on the Internet. Six of the SME managers who have paid online used eBay websites to place their orders. They say eBay promises customer and data protection to its users. Other managers said they pay only through websites of well-known firms.

Although website with online payment (for online selling) and online buying are not popular among SMEs, most of the respondents claim that e-commerce, particularly websites, are still necessary for doing business. Half of the

respondents plan to expand the use of their firm websites over the next 12 months. This is also confirmed during the interviews with managers. Yet, these managers are still not sure what kind of expansion they need, nor how soon benefits will be gained. Most are satisfied with simply making information available on their firm websites.

"We will absolutely expand our website. We need to promote our customers e-commerce so that many more firms invest in e-commerce."

SME managing director from firm I

"Yes, we are going to expand our website. Some of our customers have asked us about our online services. But we don't know to what extent we are going to expand it. We need to sit together with our staff to analyse the strengths, weaknesses, opportunities and threats (SWOT) before we can expand it."

SME manager from firm VI

"The business is expanding very well at the moment. We need to focus on this before we expand our website. Maybe in a year or so. We don't really know yet."

SME managing director from firm VI

"I am satisfied with our firm websites. We provide ICT services to various agencies. So, we just need to let the customers know what we are offering."

SME manager from firm VIII

"We design our own website and include all the information needed. We used to offer online payment to our customers. But it is rarely used. So now we just provide the necessary information to the customers. We will send brochures to the customers via e-mail or post upon request."

SME manager from firm V

7.3 CONCLUSIONS

This chapter presented e-commerce adoption and usages among SMEs in Malaysia. Descriptive analysis confirmed the three e-commerce components: e-mail, website for online selling, and online buying. A profile of website activities was then compiled. This profile is important as it could assist policymakers and practitioners to understand types of Internet and e-commerce activities that are mostly used by SMEs. Qualitative data gathered in the interviews helped the

researcher to get detailed information on each of the e-commerce components and website activities used in SMEs. The interviews also helped the researcher to understand issues that were not addressed in the survey.

CHAPTER 8

FINDINGS II: INTERNAL FACTORS THAT LEAD TO E-COMMERCE ADOPTION

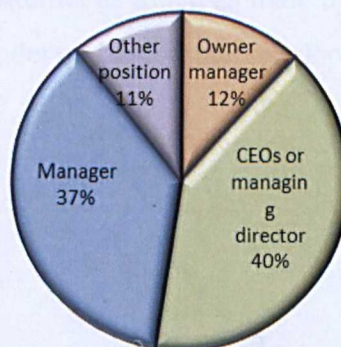
8.0 INTRODUCTION

This chapter presents the findings of the second research question of this thesis, concerning the internal factors that facilitate SMEs to adopt e-commerce – i.e. what are the demographic characteristics of SMEs and SME managers that have adopted e-commerce. This chapter starts with the findings of the demographic characteristics of SME managers, followed by SMEs' demographic characteristics. The analysis of data for this chapter was obtained from the survey. Interviews with the SME managers and comments from SME managers at the end of the survey provide the quotations used in this chapter.

8.1 DEMOGRAPHIC CHARACTERISTICS OF SME MANAGERS

The mail questionnaire was addressed to the CEO or the managing director. Of 522 respondents, more than one-half are CEOs or managing directors and owner managers (52%). More than one third of the respondents are managers (37%) (see Figure 8.1).

Figure 8.1: Position of respondents in the firm (n = 522)



Source: survey

Only 12% of respondents are owner managers in this study. Of these 12% owner managers, more than 60% are owner managers of smaller SMEs (10 to 50 employees). In smaller SMEs, the CEO, is usually the owner of the business, while in larger SMEs, the CEO may even delegate the task of replying to questionnaires. This is confirmed by one of the SME manager from a larger firm during the interview:

“I am very busy. I have more than 200 employees. I don’t know much about e-commerce. I hand over anything about information systems to my ICT manager. She can answer all your questions regarding the firm and also the e-commerce implementation.”

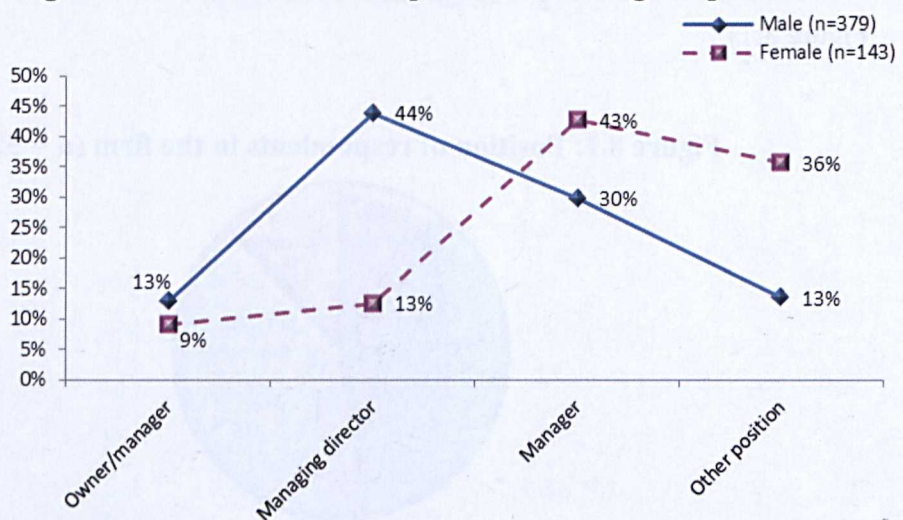
SME managing director from firm III

This section focuses on the characteristics of SME managers and the role played by SME managers in adopting e-commerce in SMEs.

8.1.1 Gender

In this study, only 143 (27%) of respondents are women. Out of 379 male respondents in this survey, more than half (57%) occupy owner manager and managing director positions, compared with only 22% of female respondents (see Figure 8.2).

Figure 8.2: Male-female comparison in managers’ position



Source: survey

67% of women in this study have tertiary qualifications compared with only 59% of men. More than half of the managers interviewed said that the trend nowadays seems to favour women. They claimed that there are more women graduates, particularly in the professional sectors. However, these managers said that they do not put any constraints on gender – women have an equal opportunity with men:

“I have no objection to working with women. Most of my managers are women. I think they are hardworking and capable in handling things. I don’t know why nowadays the female has better qualification than the male candidates.”

SME managing director from firm VI

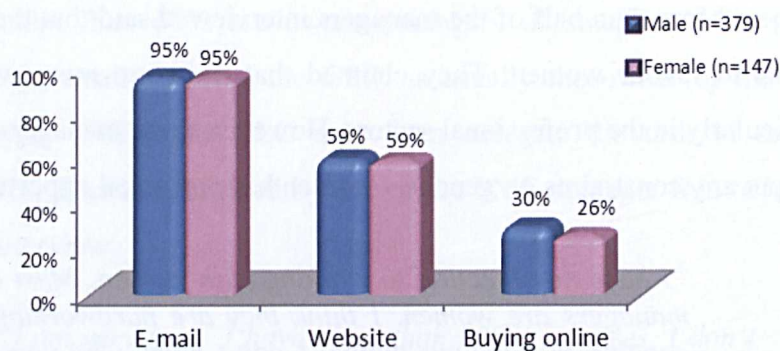
“I have five children: 3 daughters and two sons. My sons are not interested in this firm. They prefer the professional world: one is a doctor and the other is an engineer. So, this business is absolutely going to my daughters. My eldest daughter is doing her MBA in the UK; the second one is going to graduate as a lawyer soon. The youngest daughter will definitely be joining her two sisters.”

SME managing director from firm I

Most women managers in this study are young. Of 143 women managers, nearly two-thirds are between 21 and 40 years old. The average age for women managers is 35. The average age for male managers is 45, with almost 70% more than 40 years old.

The literature review shows that gender has an influence on technology usage (e.g., Gefen and Straub, 1997; Teo and Lim, 2000; Ramayah *et al.*, 2003). This study, on the other hand, finds that gender has no influence on Internet use: women managers use the Internet as much as male managers. Figure 8.3 presents the association between gender and e-commerce adoption found in this study.

Figure 8.3: E-commerce adoption by gender

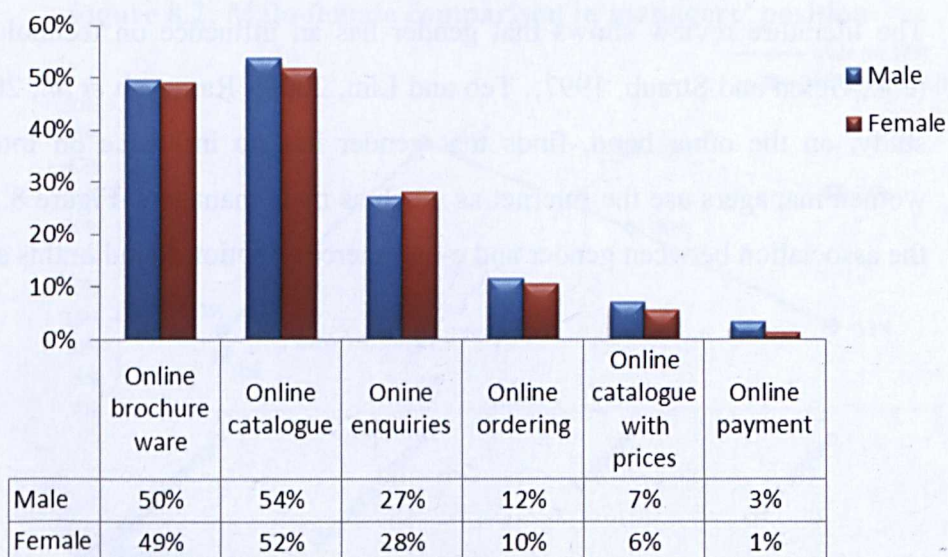


Source: survey

The cross tabulation graph shows male and female managers adopting e-commerce almost equally. There is no gender difference in the use of e-mail and websites: male respondents use e-mail and adopt websites as much as female respondents. However, for online buying, the percentage of male SME managers (30%) is slightly higher than that of female (26%) (see Figure 8.3).

Analysis of the website activities does not show any significant difference between these two genders: male SME managers used website activities as much as female SME managers. However, there is a slightly higher percentage on male when it comes to more complex website activities (see Figure 8.4).

Figure 8.4: Website activities by gender

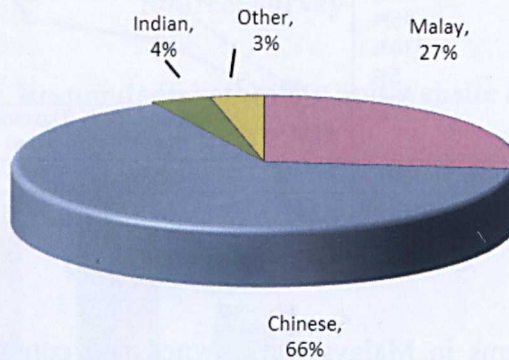


Source: survey

8.1.2 Ethnicity

Most surveyed SMEs are controlled by Chinese. This was expected because the Chinese have dominated commerce in Malaysia since independence. Nearly two-thirds of SME managers in this study are Chinese. Malay managers are slightly more than one-quarter of respondents. Indian and other ethnic groups comprise less than 5% of respondents (see Figure 8.5).

Figure 8.5: Respondents' ethnicity (n=521)



Source: survey

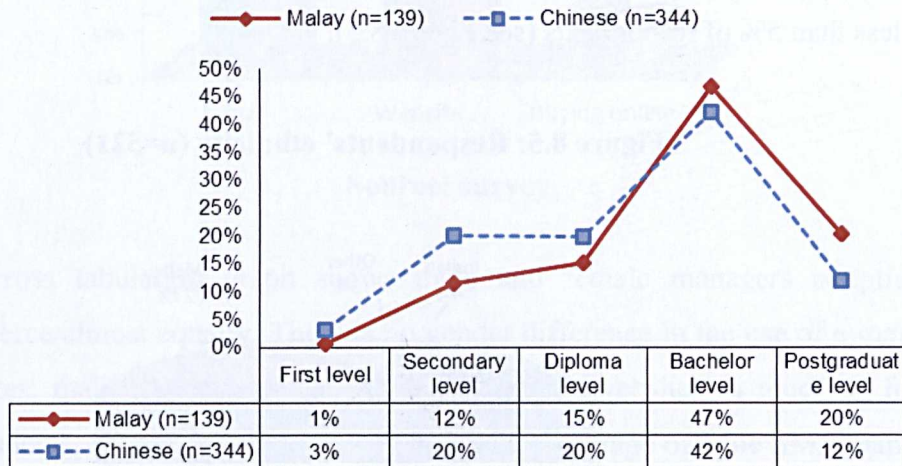
Almost three-quarters of the respondents in this study are Non-Bumiputra. In Malaysia, the word Bumiputra usually refers to Malay and indigenous groups, while other ethnic groups are Non-Bumiputra (see Chapter 2). Of the 66% of Chinese SME managers, 84% have Non-Bumiputra status firms and 16% have Bumiputra status firms.⁹ Of the 27% Malay managers, 83% come from Bumiputra status firms and only 17% of them are from Non-Bumiputra. So, there are Chinese SME managers that may own Bumiputra status firms, and Malay managers who may own Non-Bumiputra status firms. This could be an indication that the ethnic groups have started to work together.

Though some studies claim that Chinese managers are more educated than Malay managers (see, for example Wong, 2003), this study found few differences in education between Chinese and Malay SME managers (Figure 8.6). The early education qualifications of Chinese SME managers are slightly higher than those

⁹ Bumiputra status firms obtain privileges in certain matters as a temporary measure to help them compete on equal grounds with the firms of other ethnic groups (see Chapter 2).

of Malay SME managers. However, beyond the diploma level, the Malay managers overtake Chinese managers. It may be that Malay SME managers are not courageous enough to run SMEs without proper qualifications.

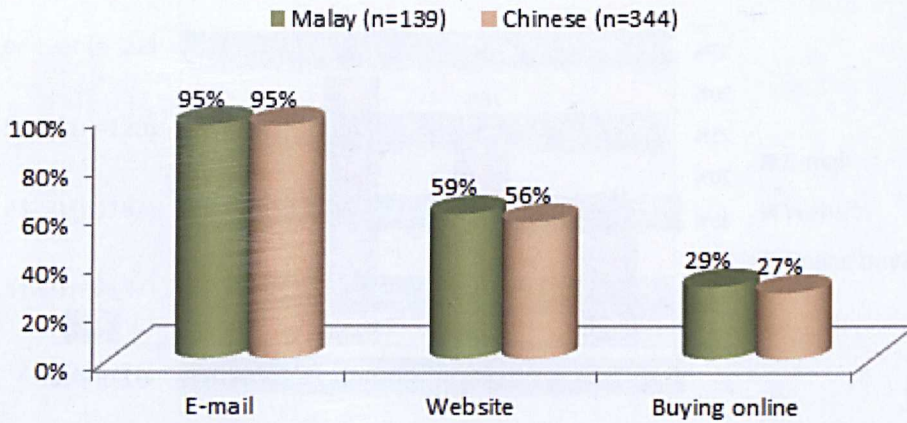
Figure 8.6: Respondents' education by ethnicity (n=483)



Source: survey

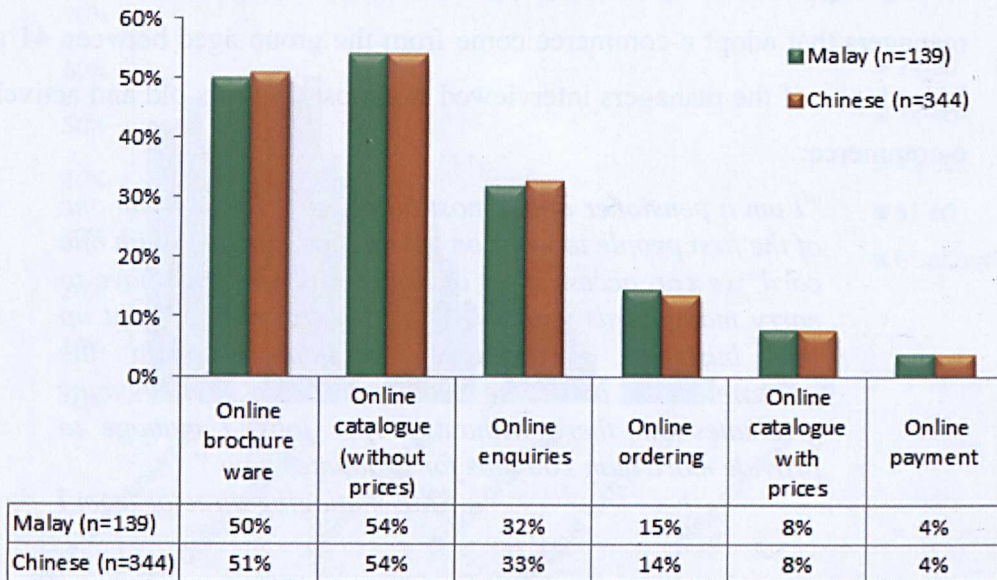
Many ICT firms in Malaysia are owned and controlled by Chinese managers, particularly in the big cities. The Chinese community in Malaysia has traditionally been superior in terms of business and technological skills, while the Malay has shown less interest in starting and developing commercial enterprises (Mohd Osman, 2001). So, it was expected that Chinese SME managers would have adopted more e-commerce than Malay SME managers. However, results show there is not much difference in e-commerce adoption between these two races: Malay SME managers use e-mail and buy online as much as Chinese SME managers (see Figure 8.7). Indeed, there is also not much difference in terms of website adoption. The Malay SME managers adopt website activities as much as the Chinese SME managers (see Figure 8.8).

Figure 8.7: Respondents' ethnicity and e-commerce use



Source: survey

Figure 8.8: Respondents' ethnicity and website activities

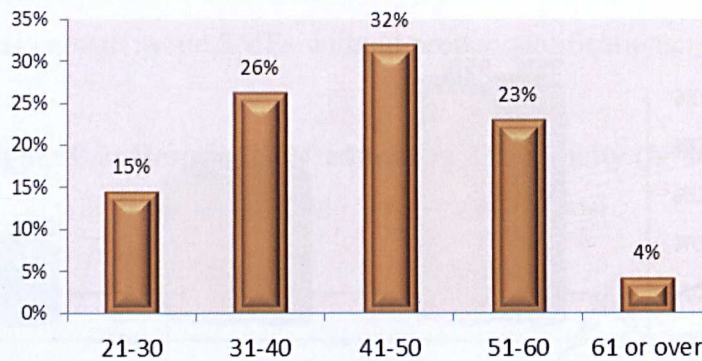


Source: survey

8.1.3 Age

Nearly three-fifths of SME managers participating in the survey are between 41 and 60 years of age. 26% of the respondents are between 31 and 40 years old and only 15% of the respondents are between 21 and 30 years old (see Figure 8.9).

Figure 8.9: Respondents' age (n = 522)



Source: survey

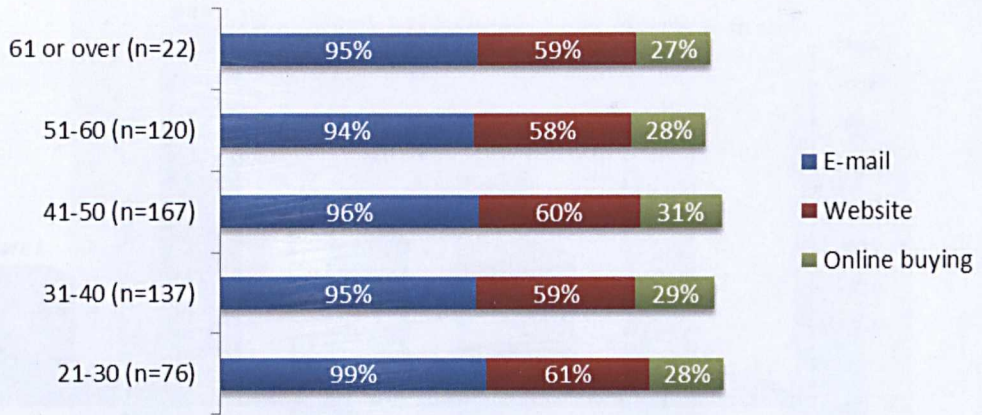
This study finds that older managers are the ones that adopt e-commerce. The average age of managers adopting e-commerce is 43. Nearly half of SME managers that adopt e-commerce come from the group aged between 41 and 60. Indeed, one of the managers interviewed is almost 60 years old and actively used e-commerce:

“I am a pensioner and almost 60 years old now. I am one of the first people to work on smart card projects. With one card, we can access a lot of things. So, we don't have to carry many cards with us. With this experience, I set up this business, E-commerce Solution, to help the government to boost the economy. There are so many graduates out there without proper jobs. I manage to provide more than 100 jobs for graduates now.”

SME managing director from I

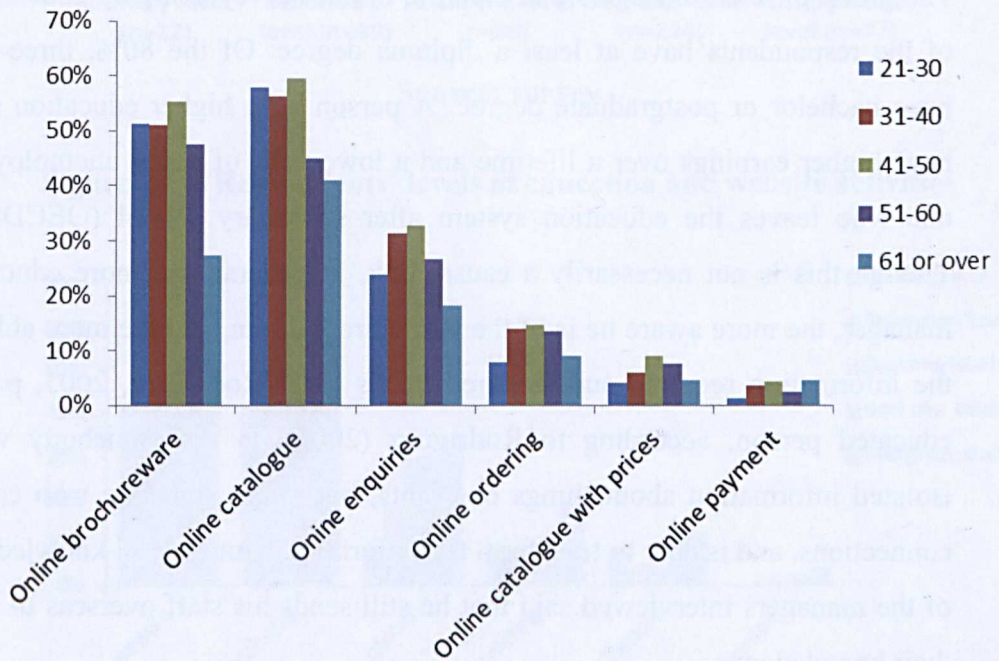
There is also no difference in e-commerce adoption among the age groups. Older managers seem to adopt e-commerce as much as younger managers (see Figure 8.10). However, analysis of the website activities shows SME managers from the group aged between 41 and 50 dominates most of the website activities (see Figure 8.11).

Figure 8.10: Respondents' age and e-commerce use



Source: survey

Figure 8.11: Respondents' age and website activities

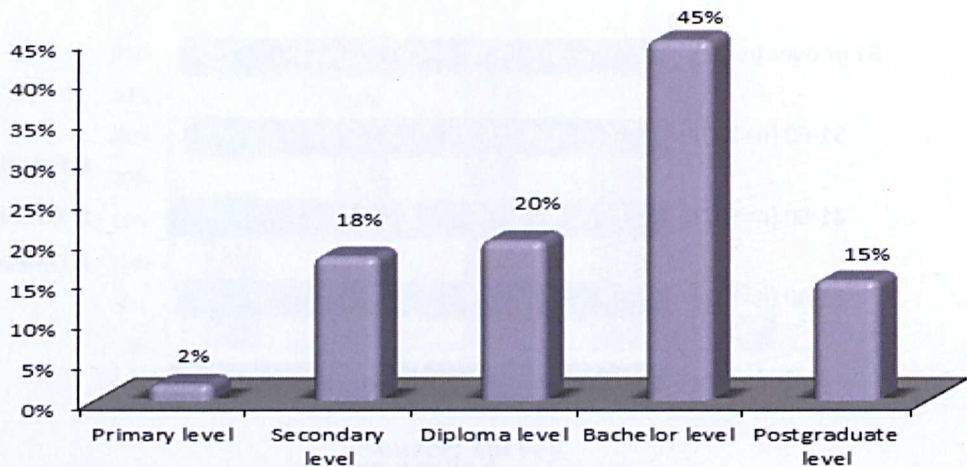


Source: survey

8.1.4 Education

Figure 8.12 shows the level of education of SME managers participating in this survey.

Figure 8.12: Respondents' highest level of formal education (n = 497)



Source: survey

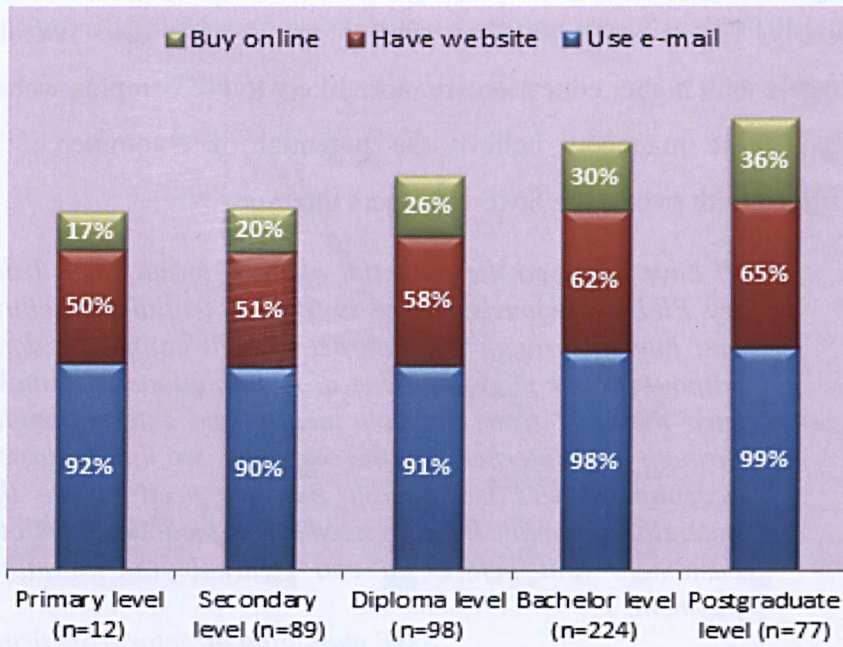
The group of SME managers participating in this survey is highly educated; 80% of the respondents have at least a diploma degree. Of the 80%, three-quarters have bachelor or postgraduate degree. A person with higher education tends to have higher earnings over a lifetime and a lower risk of being unemployed than one who leaves the education system after secondary school (OECD, 2002). Though this is not necessarily a causal link, in general, the more educated the manager, the more aware he is of the world around him, and the more able to use the information required and acquired in his firm (Rodriguez, 2005, p.75). An educated person, according to Rodriguez (2005), is not somebody who has isolated information about things or events, but rather someone who can make connections, and is able to transform this information into useful knowledge. One of the managers interviewed said that he still sends his staff overseas to enhance their knowledge:

“I still believe that education plays an important role in this business world. That is why I sponsor some of my staff to study abroad so that they can get new knowledge as well as a qualification. I want to make sure all my staff are happy working with me. I will also make sure they become a part of the firm and help me to grow this firm.”

SME managing director from firm IV

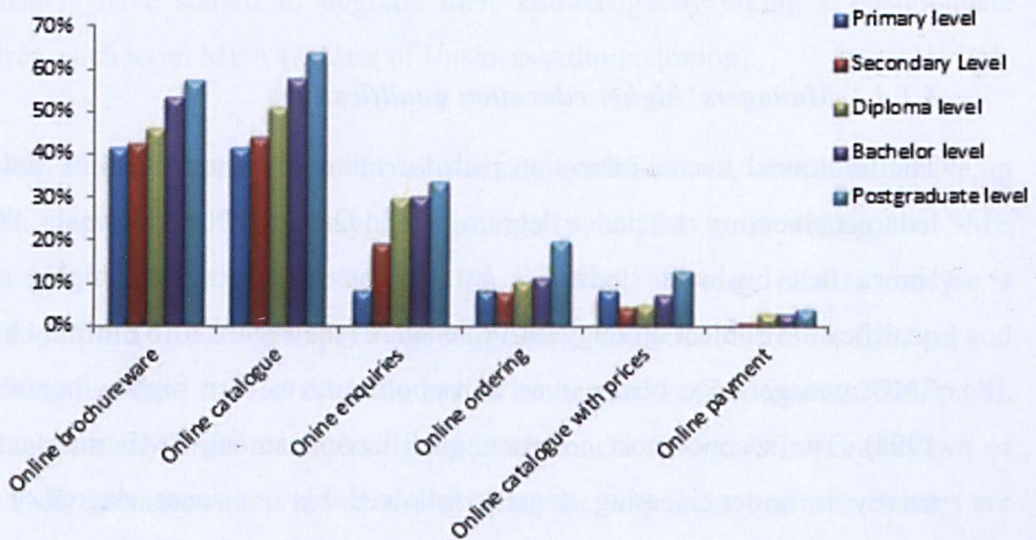
Figure 8.13 and 8.14 show the association between the sort of e-commerce used, and website activities and the level of education of the SME managers in this study.

Figure 8.13: Respondents' levels of education and e-commerce use



Source: survey

Figure 8.14: Respondents' levels of education and website activities



Source: survey

The crosstab analysis chart (Figure 8.13) shows that the educational level of SME managers may also matter in e-commerce adoption - SME managers with a higher educational background are more inclined to adopt e-commerce than those who have not had such education. The Kruskal-Wallis test also shows that the p-values are less than 0.05, which indicates that there may exist some relationships

between level of education and using e-mail, having a website and buying online. Similarly, the crosstab analysis chart (Figure 8.14) also reveals that SME managers with higher education are more likely to use complex website activities. Indeed, these managers believe the potential of e-commerce. This can be confirmed with two of the SME managers interviewed:

"I have explored the potential of the Internet when I did my Ph.D. previously. There is huge potential for selling and buying through the Internet. But, it cannot be done without proper planning. One of my ambitions is to make sure that our firm can sell locally and internationally through the Internet. At the moment, we have started accepting orders via e-mail. But, we need to see the potential of e-mail. We also need to get feedback from our customers first before we can really invest in online payment."

SME managing director from firm I

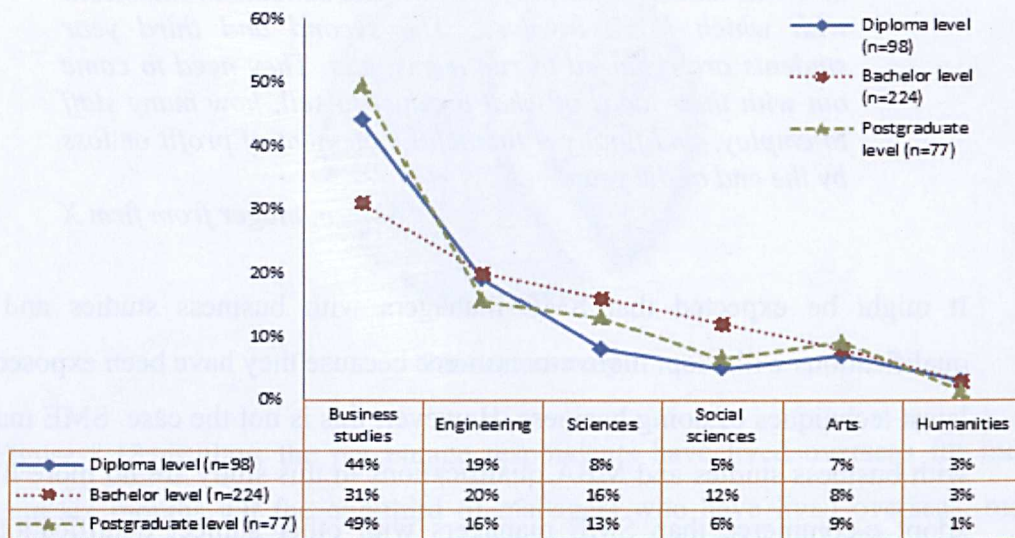
"I don't think you need to have proper education to excel in Internet business. However, I do believe that managers need to have at a least a bachelor degree to be respectful."

SME managing director from firm VIII

8.1.4.1 Managers' higher education qualifications

The traditional formal education path for many SME managers in Malaysia has led to engineering or science degrees (Mohd Osman, 2001). However, this survey shows that business studies is by far the most common higher education qualification subject among SME managers (see Figure 8.15). It may be that the SME managers see business as an opportunity to earn higher income (Storey, 1994). The second most common qualification among SME managers in this survey is an engineering degree, followed by a science degree. Few SME managers obtain higher education qualifications in social sciences, arts, humanities or other subjects.

Figure 8.15: Managers' higher education qualification subjects



Source: survey

There are times when professionals stop doing what they were trained to do to progress up the career ladder into management (Hoare, 2007). So, many SME managers have started to upgrade their knowledge by taking a postgraduate degree, such as an MBA (Master of Business Administration).

Of the 77 SME managers with postgraduate qualifications, almost half have an MBA degree. An MBA may be particularly helpful in providing the SME manager with 'the whole picture' of a situation, allowing him to analyse a situation from different perspectives, suggesting new possibilities for the firm and teaching him how to read evolving trends in the market (Rodriguez, 2005, p.68). Although many SME managers agree that business studies is important, two of the SME managers interviewed also criticise the way some business courses are offered.

"I have been in the business world for more than 15 years now. I did my MBA to get a recognised certificate. Studying theoretically is very different from doing it in the practical world. I think some of the university lecturers do not really know about what happens in the business world. We need lecturers who have worked in industry before to share their experience with us. "

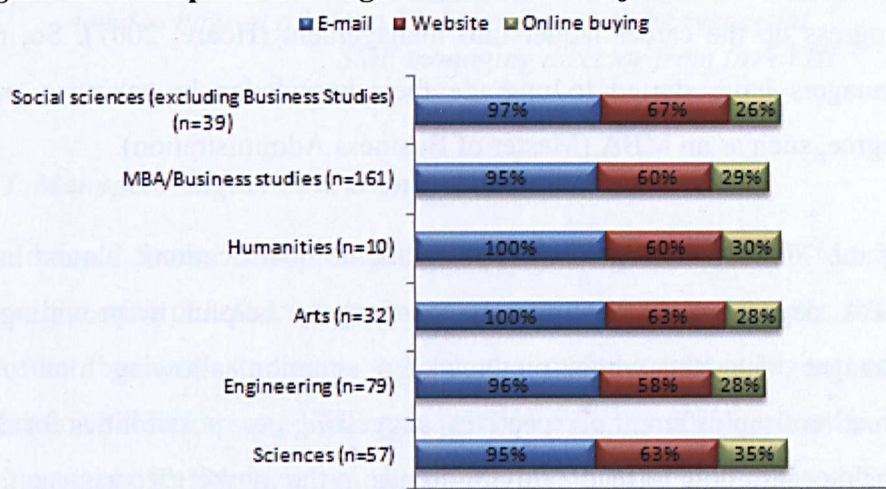
SME managing director from firm IV

“More practical issues should be implemented in the BBA/MBA, such as how to run a firm and get a profit out of it. I was amazed by one of the business schools in Indonesia with which I am involved. The second and third year students are required to run a business. They need to come out with their ideas of what product to sell, how many staff to employ, and finally a financial statement of profit or loss by the end of the year.”

SME manager from firm X

It might be expected that SME managers with business studies and MBA qualifications will adopt more e-commerce because they have been exposed to the latest techniques of doing business. However, this is not the case. SME managers with business studies and MBA qualifications in this study are no more likely to adopt e-commerce than SME managers with other subject qualifications (see Figure 8.16).

Figure 8.16: Respondents’ higher education subject and e-commerce use



Source: survey

8.1.5 Experience Overseas

Over one-third of the SME managers taking part in this study have lived overseas for more than six months in a single period (Figure 8.17). Some of the managers have lived overseas in difference places, and some of them have been brought up there (see Figure 8.18).

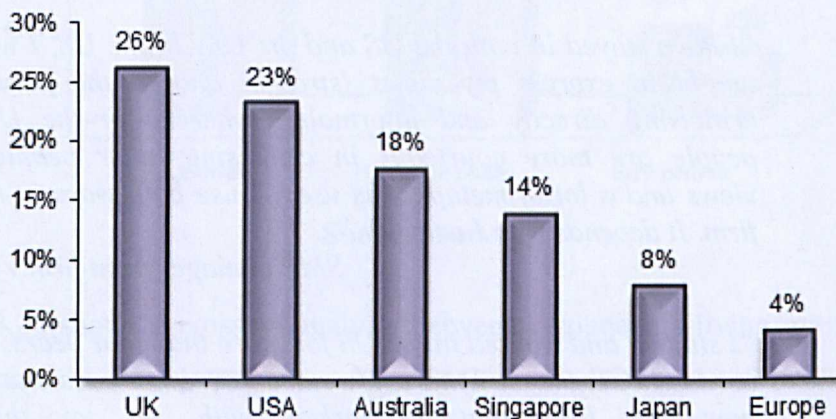
Figure 8.17: Managers with experience of living overseas (n = 518)



Source: survey

Figure 8.18 displays the percentage respondents have lived overseas for more than six months. Of the one-third of managers who have lived overseas, most have been in Western countries (the United Kingdom, followed by the United States and Australia). These are the countries where most Malaysian students go to study. These three geographical areas use English as their first language (English is now a compulsory second language in Malaysia education (Malaysia, 2008b)). They also comprise some of the world's most developed economies and have some of the highest standards of living; the opportunities they offer for further personal development, education, and employment are unmatched anywhere in the world (Rodriguez, 2005).

Figure 8.18: Regions where respondents have lived overseas for more than six months (n = 214)



Source: survey

Note: Percentages do not add up to 100 because of possible multiple answers.

Most of the SME managers argued that living abroad for a considerable period is one of the most powerful and enduring intellectual experiences. This is confirmed by two of SME managers interviewed:

“There is a big difference between those who have lived abroad before and those who just live locally. They are more open, vocal and able to survive, whatever the conditions.”

SME managers from firm I and IV

“I served the government for more than 30 years. I have stayed in more than 10 countries over the last 20 years. After retirement, I opened this business. I have more than 50 employees now and the firm is expanding. The experience that I had during my years overseas has opened my eyes. I grab all the good ideas that I got in each country to implement in this firm and try to avoid the poor ones.”

SME managing director from firm I

The region where the SME managers have lived may also influence their ICT awareness. The ideas and concepts that have proved successful in overseas markets are adapted to their own national market (Rodriguez, 2005). Personal contacts made while living abroad may be turned into business contacts or into sources of practical information (Rodriguez, 2005). SME managers may also look for an overseas niche to fill with the product or service that their firms offer. Interestingly, a few managers interviewed have started to send their staff overseas not only to further study, but also for industrial training to bring new perspectives to the business.

“I have stayed in both the US and the UK. In the US, I was taught to express my views ‘straight and to the point’, criticising directly and informally; whereas in the UK, people are more courteous in criticising other people’s views and a lot of metaphor is used. I use both ways in my firm. It depends who I am with.”

SME manager from firm VIII

“I studied and worked in the US for more than four years. In terms of ICT, they are more advanced than us. I was amazed how the firm that I worked with set up their interorganisational system. So, when I came back, I was interested in developing ICT. With my uncle’s help, I managed to set-up an ICT firm. My firm supplies ICT security hardware to government agencies. I went overseas

almost every month to update myself with the latest technology as well as to talk with our suppliers. It is good to work across boundaries.”

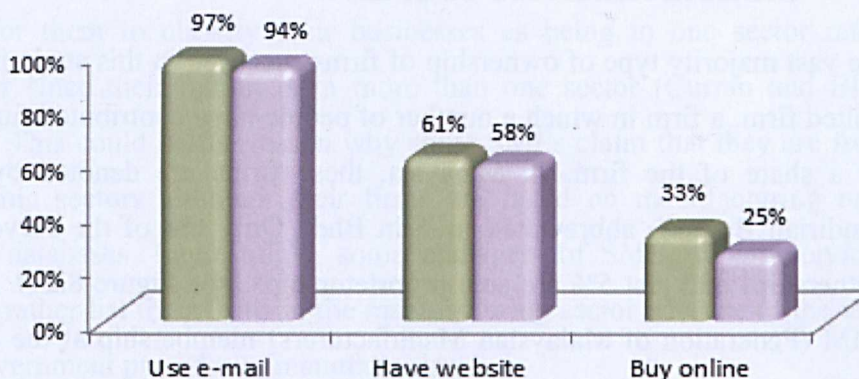
SME managing director from firm IV

“...oh yes, my firm has started to send our staff overseas to further studies as well as for industrial training. Experience overseas is something that I cannot buy and I want my staff to gain.”

SME managing director from firm I

Figure 8.19 displays the impact of living overseas on e-commerce adoption. Data shows that SME managers who lived overseas for a period tend to use e-mail and adopt websites little more than those managers who have not lived overseas. However, there is an indication that SME managers who have lived overseas are more likely to buy online than those who have not. This is especially true for SME managers with higher education. More than one half of the SME managers with at least a bachelor degree in this study have lived overseas more than six months in a single period. Most of them (more than 50%) have lived in the United Kingdom or United States.

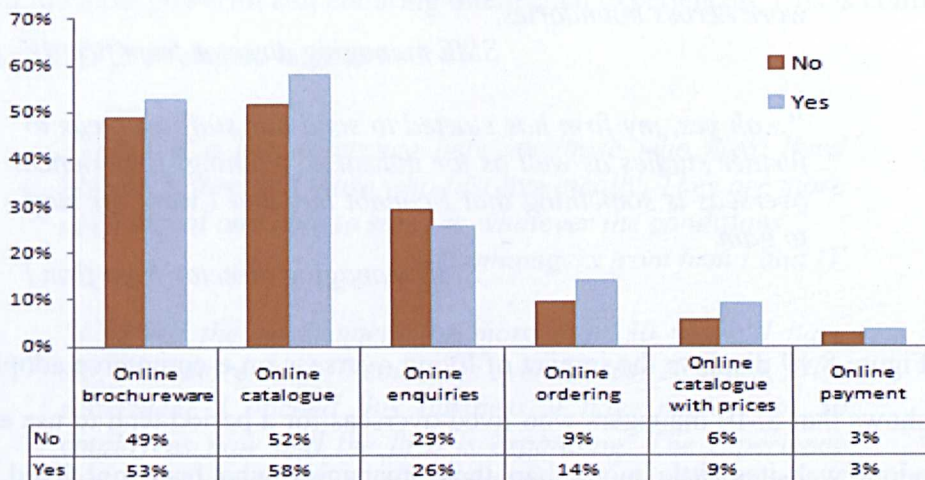
Figure 8.19: Respondents with experience of living overseas adopting e-commerce



Source: survey

Figure 8.20 shows a crosstab analysis between respondents living overseas and website activities used. Data shows that SME managers who lived overseas for a period tend to use complex websites more than those managers who have not lived overseas. Indeed, one manager who had lived overseas claimed that he enjoyed buying and selling through eBay while he was living abroad.

Figure 8.20: Respondents with experience of living overseas and website activities



Source: survey

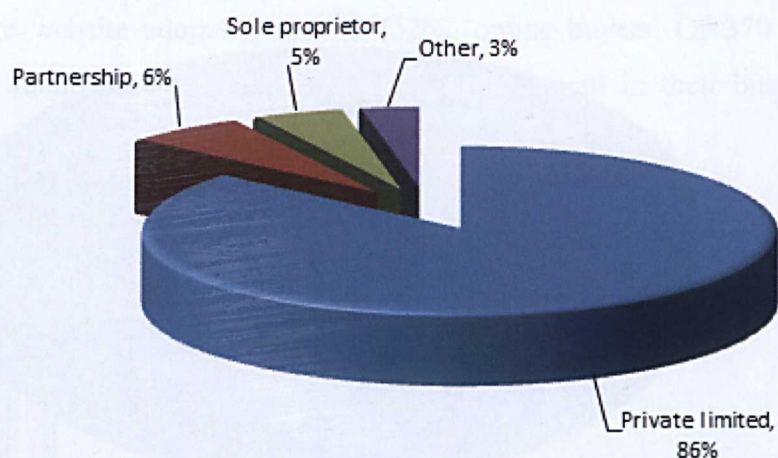
“I studied for five years in the United Kingdom. I am very familiar with eBay and Paypal systems. I have bought and sold online before. It was really convenient. I even made some profit selling on eBay. This was only my personal experience. One day I would like to implement e-commerce in my firm, but of course not now. It may be when e-commerce has matured in the country. ”

SME managing director from firm VI

8.2 CHARACTERISTICS OF SMES

The vast majority type of ownership of firms surveyed in this study is the private limited firm, a firm in which a number of people have contributed funds in return for a share of the firm. In Malaysia, these firms are denoted by the words 'Sendirian Berhad', abbreviated to 'Sdn Bhd'. Only 6% of the survey firms are partnerships and just 5% are sole proprietorships (see Figure 8.21). A profile of FMM (Federation of Malaysian Manufacturers) membership at the end of 2005 indicated the same pattern, with only 5% and 9% of the firms in the partnership and sole proprietorship categories (FMM, 2005).

Figure 8.21: Type of ownership of SMEs (n=522)

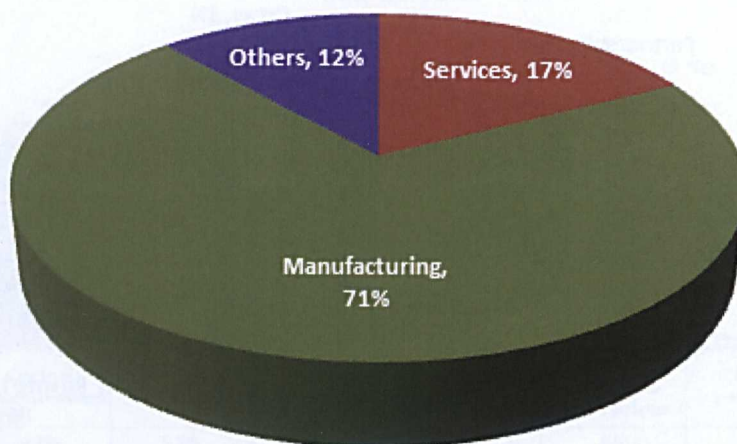


Source: survey

8.2.1 Economic Sector

The economies of the most developed countries are shifting from an industrial to a post-industrial stage based on knowledge (Rodriguez, 2005, p.101). This study finds that more than 70% of the surveyed firms are from the manufacturing sector and not even 20% are from the service sector (see Figure 8.22). This is expected since the SME population in this survey is taken mostly from manufacturing databases. The other 10% of the surveyed firms are from other sectors, such as construction, traders and retailers. Some of the SME managers said that it is not easy for them to classify their businesses as being in one sector rather than another since their output is in more than one sector (Curran and Blackburn, 2001). This could be the reason why some SMEs claim that they are from other economic sectors although their firms are listed on manufacturing or service sector databases. Interestingly, some managers of SMEs in the service sector would rather list their firms in the manufacturing sector because of the incentives the government provides to manufacturing.

Figure 8.22: SME respondents by sector (n=522)



Source: survey

“We are part of the manufacturing sector; but we are also part of the service sector. We give advice to our customers regarding manufacturing products. Is it okay if I tick the ‘others’ category in the questionnaire?”

SME manager (survey)

“We provide maintenance services for automobile products. We are listed under the manufacturing sector. There are many grants from the government for the manufacturing sector compared to the service sector. So, that is why we registered this firm under SMIDEC.”

SME manager from firm F

There are 461 SMEs in the manufacturing and service sector in this study. 438 SMEs (95%) use e-mail in their businesses, 267 (58%) have websites and only 132 (29%) have ever bought online. Table 8.1 shows adopters and non-adopters of each of these e-commerce components according to these two sectors.

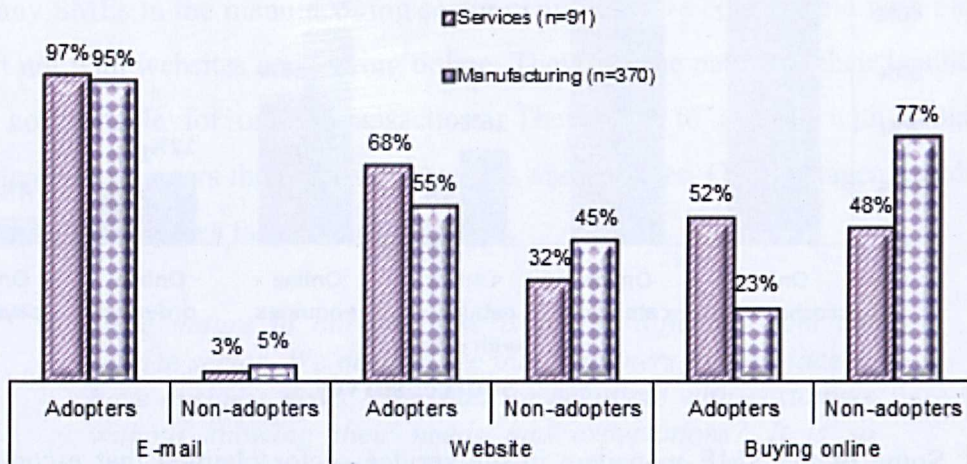
Table 8.1: E-commerce adopters and non-adopters by sector (n=461)

	E-mail		Website		Buying online	
	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters
Services	88	3	62	29	47	44
Manufacturing	350	20	205	165	86	284
Total	438	23	267	214	133	328

Source: survey

Of 91 respondents from the service sector, 88 (97%) are e-mail adopters, 62 (68%) are website adopters, and 47 (52%) online buyers. Of 370 respondents from the manufacturing sector, 350 (95%) use e-mail in their businesses, 205 (55%) have a website, and 86 (23%) buy online (Figure 8.23).

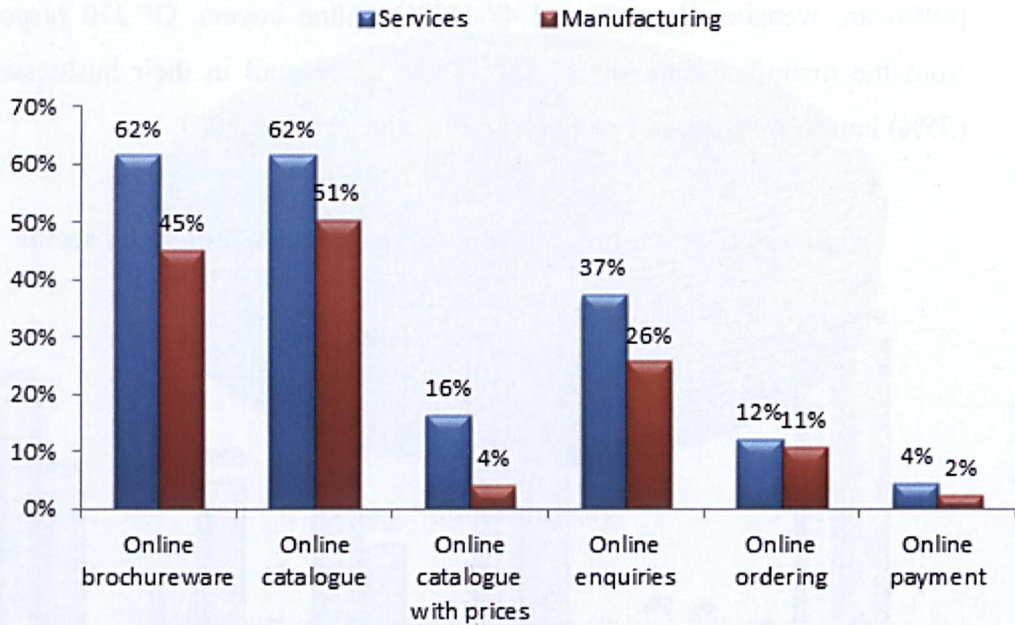
Figure 8.23: E-commerce adopters and non-adopters by sector



Source: survey

Results show that most SMEs use e-mail regardless of sector: SMEs in the service sector use e-mail as much as SMEs in the manufacturing sector. It may be that e-mail is common among SMEs and already a part of SME infrastructure. However, there is an indication that SMEs in the service sector adopt websites and buy online more than those in the manufacturing sector. SMEs in the service sector have almost 15% more websites than SMEs in the manufacturing sector. SMEs in the service sector also buy online almost 30% more than the manufacturers. The crosstab bar chart also displays that SMEs in the service sector use more complex website activities that SME in the manufacturing sector (see Figure 8.24).

Figure 8.24: Website activities by sector



Source: survey

Some of the SME managers in the service sector claimed that e-commerce is important for them. This is confirmed by three of the SME managers interviewed:

“I think e-commerce is more suitable for SMEs in the service sector. I think people nowadays need online services, such as ticket bookings and online hotel reservations.”

SME manager from firm II

“We give financial advice to our customers. It is important that we have a website and e-mail. Our customers can browse all kinds of services that we have and contact us directly through our online enquiries or e-mail. We then get back to them for more detailed procedures.”

SME manager from firm III

“We provide e-commerce solutions to both large and SME organisations. Most of our customers are from the service sector. I am not sure why those in the manufacturing sector are reluctant to have a more complex website, such as an online payment system. Some of them come to us just to enquire how to install a simple website.”

SME managing director from firm I

It can be speculated that SMEs from the service sector have websites and buy online more than firms from the manufacturing sector. There is an indication that firms from the PIKOM database have more websites and buy online more than those on the other two databases because the PIKOM database listed all the ICT

firms. A Kruskal-Wallis test was carried out to investigate the sampling bias between the three databases used in this study. The results show that the p-value is 0.404 and 0.237 for both having a firm website and buying online respectively. This indicates that both having a website and buying online do not significantly differ across the three databases ($p > 0.05$).

Many SMEs in the manufacturing sector claim they are comfortable with e-mail, but not with websites and buying online. They feel the nature of their businesses is not suitable for online transactions. They need to discuss with actual or potential customers the details of products and services. One manager stated that negotiation requires face-to-face meetings.

“The nature of our business is totally different from the service sector. We need to see our customers face-to-face to have business deals. How can we negotiate with customers without knowing their needs and expectations? It is so absurd to compare manufacturing firms with others. Other sectors, such as hotel and tourism, might need e-commerce sites, but obviously not us.”

SME managing director from firm J

Interestingly, some SMEs in the service sector also declare that e-commerce is not for them. They said it depends what kind of products and services the SME provides:

“We deal with all the ICT stuff. We also do computer servicing and maintaining. But, we cannot tell customers the exact cost of our service. We first need to see what the problems are. Even then, we can only estimate the cost. If there are more problems, we first contact the customers, of course by phoning them.”

SME manager from firm N

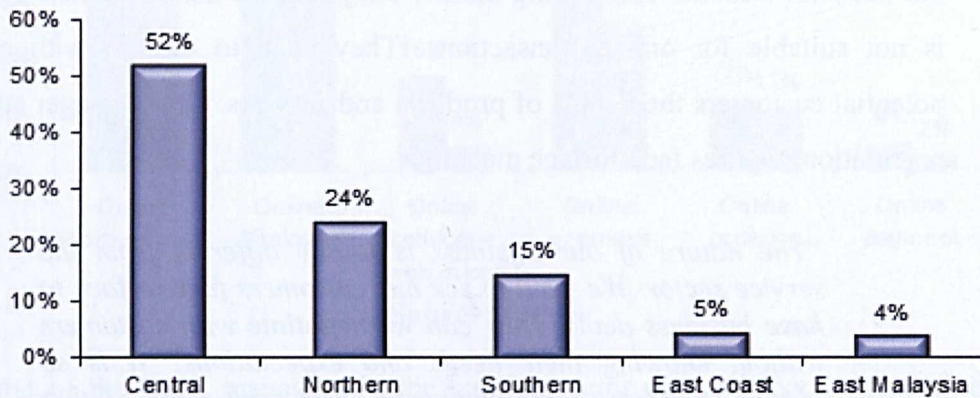
“We provide gold jewellery servicing to our customers. We also accept trade-ins. We try to use e-commerce to commercialise our products. But it is so difficult. The gold value depends on the market price. We cannot estimate the value of our customers’ jewellery through the website. We first need to see the items, weigh them and calculate the depreciation before we can agree the value. How can this be done on the Internet?”

SME managing director from firm O

8.2.2 Location

SMEs in Malaysia operate their businesses everywhere in the country. Some SMEs are located in Peninsular Malaysia (Central region, Northern region, Southern region, and the East Coast region), and some in East Malaysia. Figure 8.25 shows the percentage of firms operating in these regions.

Figure 8.25: Survey respondents by region (n=522)



Source: survey

As expected, the majority of the responding firms are located in Peninsular Malaysia. More than half of the respondents are located in the Central region. This is not surprising because the Central region is the most densely populated of the five regions, and this is where Kuala Lumpur, the capital city of Malaysia, is located. Most of the national infrastructure, such as highways, airports, ports and industrial estates, is here, which explains why many firms prefer the location. The East Coast region of Peninsular Malaysia and East Malaysia remain underdeveloped (Mohd Osman, 2001).

Table 8.2 displays the percentage of e-commerce adopters by location. More than half of the respondents to this survey that use e-commerce come from the state of Selangor, the Federal Territory of Kuala Lumpur, and Penang. Only slightly above 5% of SMEs in the East Coast of Peninsular Malaysia and East Malaysia have e-mail and websites. This is no surprise because these states lack infrastructure and have very limited broadband services (only 2% SMEs have broadband services).

Table 8.2: E-commerce adopters by location

Region	States	E-mail	Website	Online Buying
Central	Selangor	37%	39%	40%
Central	Kuala Lumpur	13%	14%	15%
Northern	Penang	10%	10%	11%
Southern	Johor	9%	10%	8%
Northern	Perak	9%	7%	5%
Northern	Kedah	5%	5%	3%
Southern	Melaka	5%	3%	3%
Southern	Negeri Sembilan	2%	3%	5%
East Coast	Pahang	2%	2%	2%
East Coast	Terengganu	2%	1%	2%
East Coast	Kelantan	1%	1%	2%
East Malaysia	Sarawak	2%	2%	0%
East Malaysia	Sabah	2%	1%	1%

Source: survey

Two managers interviewed argued that they hardly get connected to the Internet when they are in East Coast and East Malaysia:

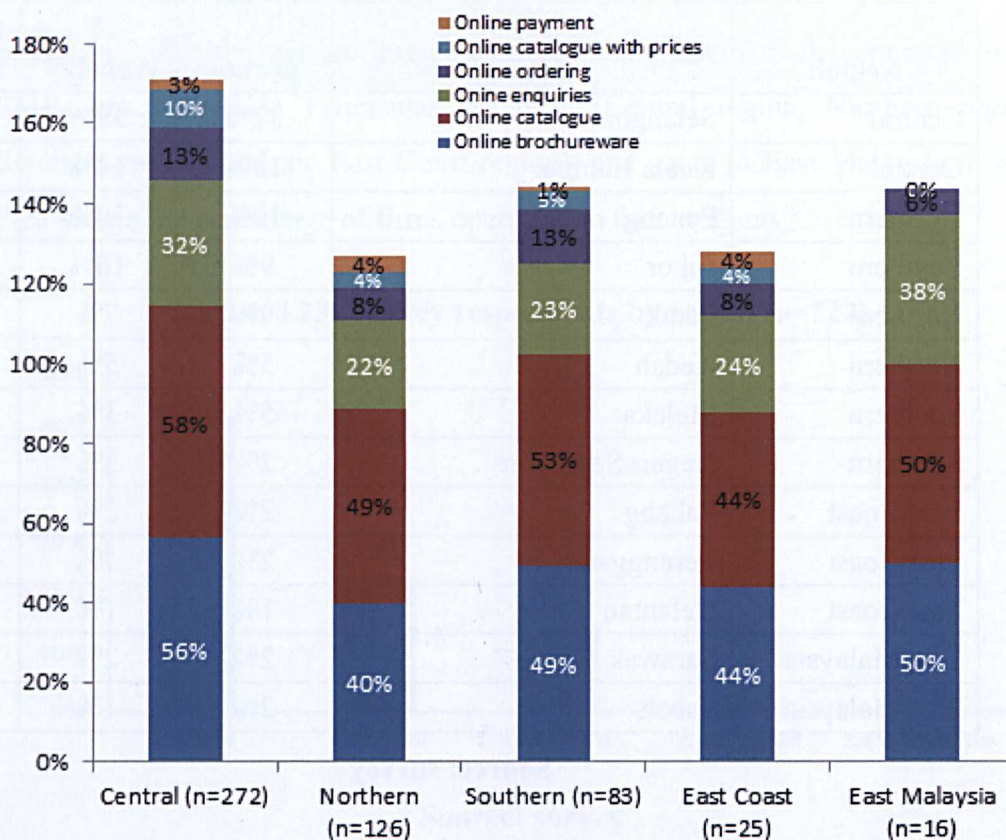
“The Internet line in rural areas is so slow. I have to wait hours and hours to upload and download information from the Internet. My firm has a website, but we hardly ever update it due to the above reason.”

SME manager from firm VII

“We only have a dial-up connection at the moment. There is no ‘streamyx’ service available in this area. How can we do more without these facilities?”

SME manager from firm C

Figure 8.26: Website activities by region (n=522)



Source: survey

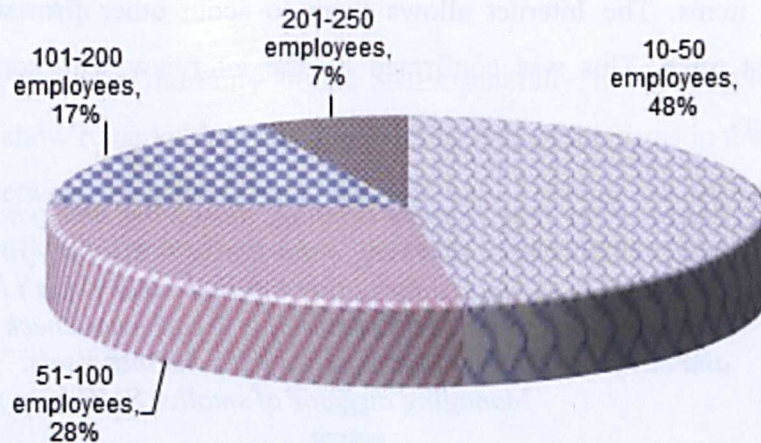
Figure 8.26 displays the crosstab analysis of website activities by region. SMEs in the Central region dominate the website activities. While it is often said that e-commerce allows SMEs to be located anywhere they can be connected to the Internet (Daniel *et al.*, 2002), this study finds this is not true. Many SMEs are located in region where there is appropriate infrastructure such as good transportation systems, uninterrupted power supplies, broadband services, and also could provide skilled and professional workers.

8.2.3 Firm Size

The measure of firm size used throughout this study is the total number of full time employees or their equivalent. The European criteria were used: a medium-sized firm has fewer than 250 employees; a small-sized firm has fewer than 50. Micro firms, with fewer than 10 employees, were deliberately not surveyed.

This research was targeted at firms that have between 10 and 250 employees. Figure 8.27 shows the sample by number of full-time employees. The smallest firms dominate (10 to 50 employees) in this survey.

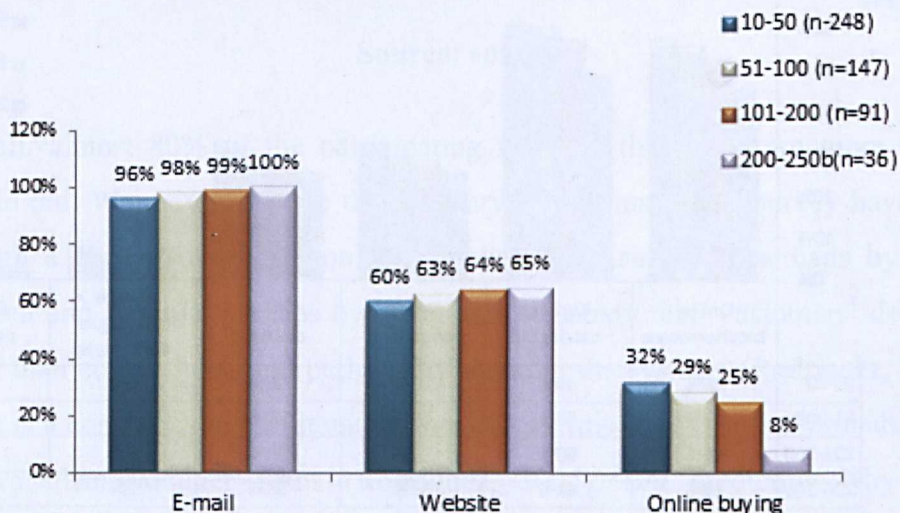
Figure 8.27: Survey respondents by size (n=522)



Source: survey

This study finds that size of SME does not determine e-mail usage or website adoption: smaller SMEs use e-mail and adopt websites as much as larger SMEs (see Figure 8.28).

Figure 8.28: E-commerce adopters by firm size



Source: survey

The adoption pattern for online buying is interesting: smaller SMEs are more likely than larger SMEs to buy online. The p-value of the Kruskal-Wallis test ($p =$

0.009) is also less than 0.05, which indicates that buying online may have some relationship across the four groups of firm size. The cross tabulation graph in Figure 8.28 shows that some 32% of the smallest SMEs buy online compared with just 8% of the largest SMEs. This might be explained by the flexibility of smaller SMEs. They have little bureaucracy and quick decisions can be made in buying items. The Internet allows them to scout other firm websites for the cheapest price. This was confirmed by the interview with some of the SME managers.

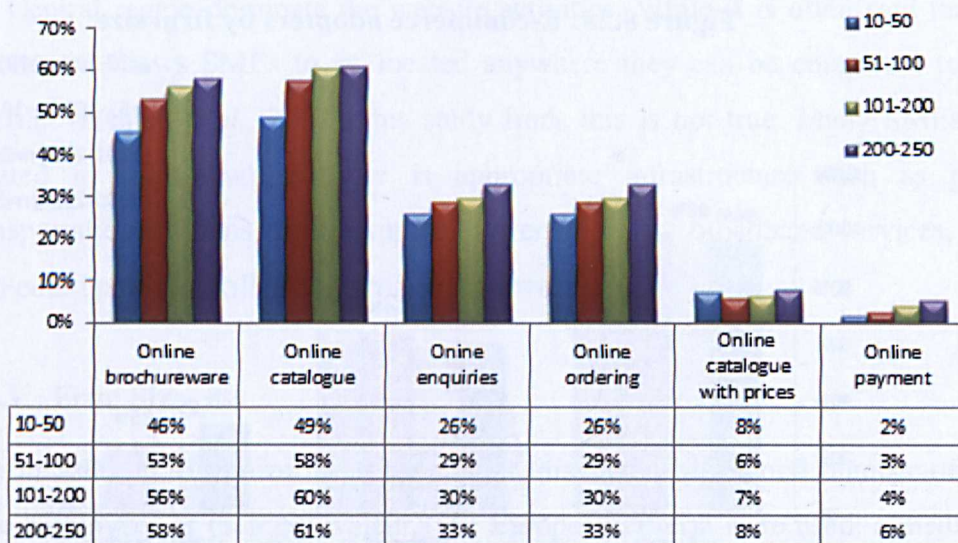
“Most of my time is spent reading, answering and sending e-mails. E-commerce is a very important aspect of my firm and me. There is so much information out there that I don’t have to rely now on experts and consultants. I can even check prices and buy from the suppliers directly with cheaper deals.”

Managing director of smaller SME from firm IX

“I check prices of goods on other firms’ websites and get quotations from the firm via e-mail. We then negotiate with our suppliers. However, my boss makes the decision whether to purchase from the suppliers or other firms.”

Manager of larger SME from firm II

Figure 8.29: Website activities by firm size



Source: survey

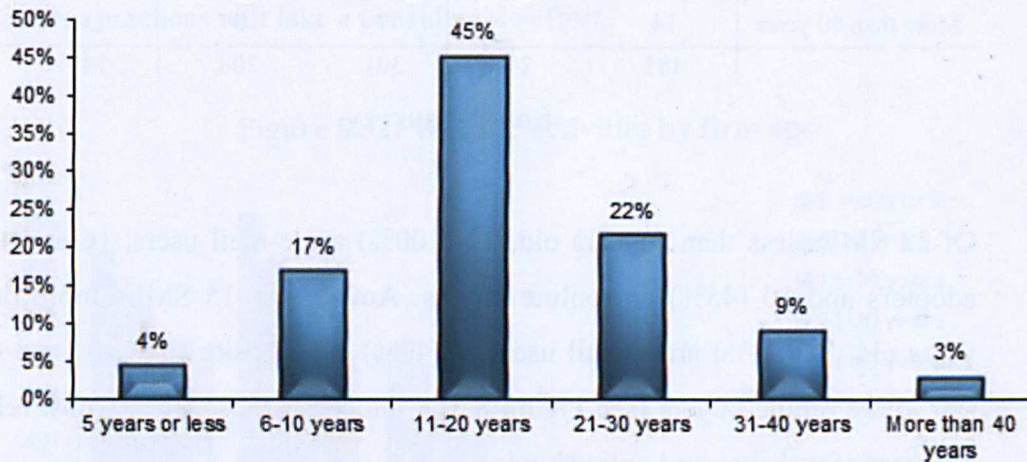
Figure 8.29 shows the crosstab analysis graph between firm size and website activities. Both smaller SMEs and larger SMEs use their websites mostly to

supply online brochures and online catalogue with the larger SMEs seem to dominate these activities. However, there is little difference in the propensity to engage in more complex website activities: larger firms seems to engage with more complex website activities.

8.2.4 Firm Age

There may be heavy mortality among SMEs generally, but the surviving firms in this study show remarkable resilience. Almost half of the firms in the survey were founded between 11 and 20 years ago, and only 21% are less than ten years old (see Figure 8.30). The average age of the firms in this study is 16.4 years.

Figure 8.30: Age of respondent SMEs (n=509)



Source: survey

Overall, almost 80% of the participating firms in this study are more than a decade old. We may speculate that the surviving firms in this survey have gone through a competitive selection process and have survived, perhaps by being efficient and flexible; perhaps by being able to satisfy their customers' demands better than competitors; and perhaps by working the systems (Rodriguez, 2005). There is a consensus in the literature that older firms have a higher probability of survival than younger firms (Rodriguez, 2005). But predicting why some businesses fail and others do not is a complex task with no easy and precise answers (Storey 1994).

As stated in Chapter 3, studies show that firm age is related to ICT adoption behaviour (see Karshenas and Stoneman, 1995; Hollenstein, 2004). Table 8.3 shows the adopters and non-adopters of e-commerce according to the age of the firm.

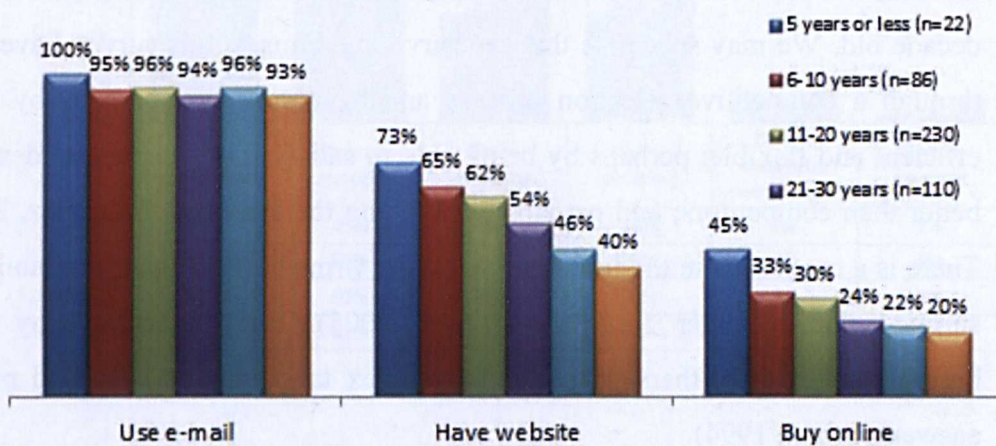
Table 8.3: Number of e-commerce adopters and non-adopters by age (n=509)

	E-mail		Website		Buying online	
	Adopters	Non-adopters	Adopters	Non-adopters	Adopters	Non-adopters
Fewer than 5 years	22	0	16	6	10	12
6-10 years	82	4	56	30	28	58
11-20 years	220	10	142	88	70	160
21-30 years	103	7	59	51	26	84
31-40 years	44	2	21	25	10	36
More than 40 years	14	1	7	8	3	12
	485	24	301	208	147	362

Source: survey

Of 22 SMEs less than 5 years old, 22 (100%) are e-mail users, 16 are website adopters and 10 (45%) are online buyers. Among the 15 SMEs more than 40 years old, 14 (93%) are e-mail users, 7 (40%) are website adopters, and only 3 (20%) are online buyers (see Figure 8.31). Older SMEs seem the most reluctant adopters of websites and online buying.

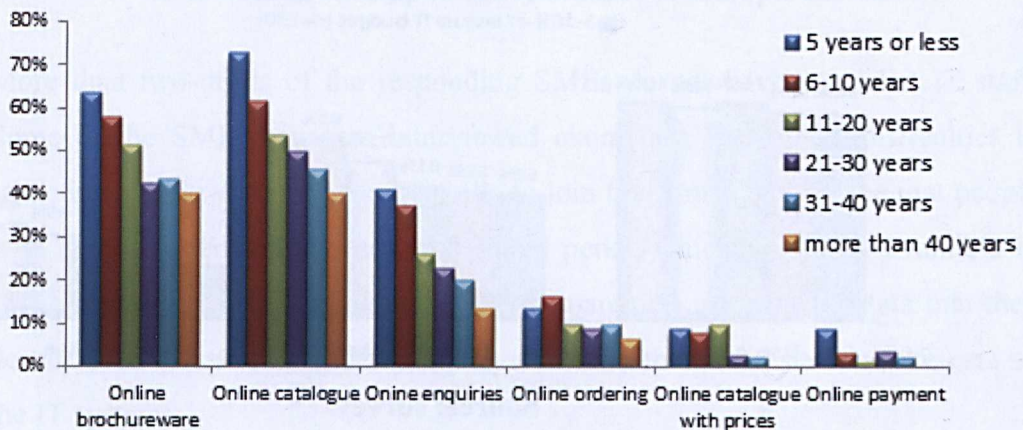
Figure 8.31: E-commerce adopters by firm age



Source: survey

The crosstab graph in Figure 8.31 show that firm age that size of SME does not determine e-mail usage: older SMEs use e-mail as much as younger SMEs. However, younger SMEs tend to adopt websites and buy online more than older SMEs. Indeed, the younger SMEs seem to use more website activities than the older SMEs (see Figure 8.32). This might be attributable, in part, to the basic ICT infrastructure available to younger SMEs when they set up in business. They can choose applications tailored to their needs. So, many SME managers from younger firms may have installed the latest ICT. Conversely, complex ICT technologies were uncommon when older firms were established. Many of these older firms may have sunk ICT capital and have entrenched ICT systems. They are perhaps more ‘traditional’ in their approach, preferring to remain within their commitments (MacGregor and Vrazalic, 2007). So, for them to change from their current practices will take a considerable effort.

Figure 8.32: Website activities by firm age



Source: survey

8.2.5 IT Resources of the Responding SMEs

IT resources are said to facilitate e-commerce adoption among SMEs. Almost 100% of respondents use computers in their business, regardless of firm size. Only 3 out of the 522 SMEs in the survey do not use a computer. The firms participating in this study have been using computers for more than 18 years on average. Nearly three-quarters of respondents claim that they have been using the Internet for more than 5 years. The Internet can be considered as part of the basic infrastructure in most firms now. Yet, most SMEs in this study seem to spend

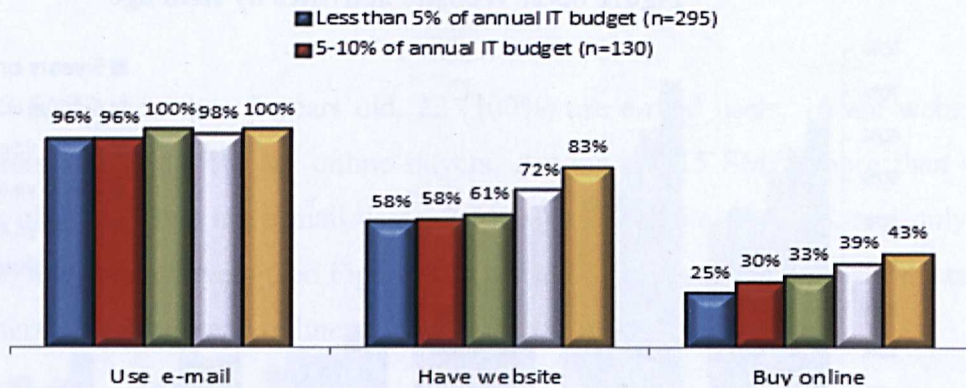
little on IT. Only one third of these SMEs allocate more than 5% of their annual budget to IT. One of the managers interviewed stated that he only allocated small amount of money to invest in IT:

“I only use a computer to keep information about my customers and the firm inventory. I only browse the Internet during leisure time at home, but not in the office. So, I only allocate a small portion to IT expenditure in my firm’s annual budget.”

SME managing director from firm II

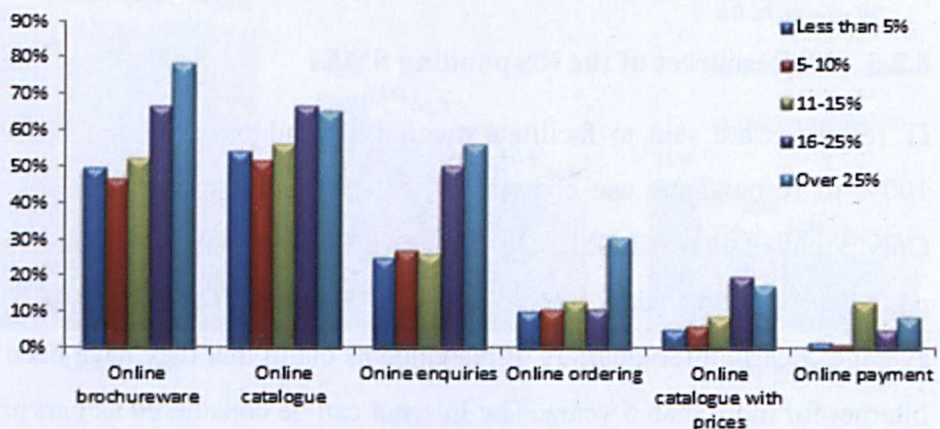
This study finds higher IT spending does not determine e-mail usage among the SMEs. However, SMEs with higher IT expenditure are more likely to have a website and buy online (see Figure 8.33). Similarly, SMEs with higher IT expenditure also seems to use more website activities than SMEs with lower IT expenditure (see Figure 8.34).

Figure 8.33: E-commerce adopters by IT expenditure



Source: survey

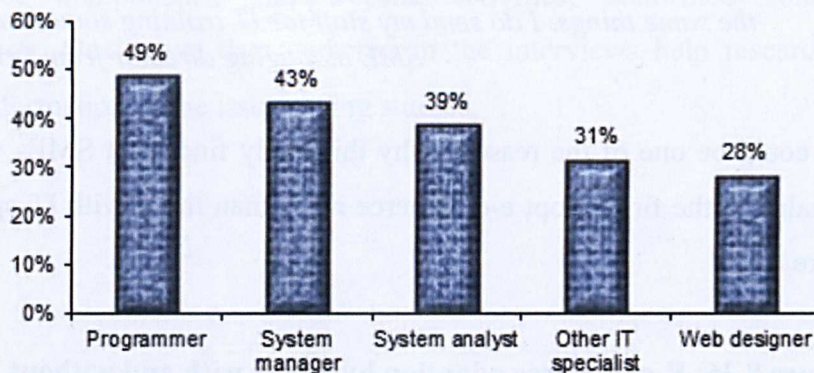
Figure 8.34: Website activities by IT expenditure



Source: survey

There are only 150 SMEs (29%) in this survey that employ IT specialists; larger SMEs are more likely to employ IT specialists than smaller ones. Almost half of these SMEs (49%) hire programmers, and employ system managers (43%) (see Figure 8.35). Web designers are the IT specialists least likely to be employed in SMEs.

Figure 8.35: Proportion of IT specialist staff employed (n=150)



Source: survey

* Data does not add up to 100% because of multiple answers

More than two-thirds of the responding SMEs do not have specialist IT staff. Some of the SME managers interviewed claim that SMEs face difficulties in attracting people with relevant IT skills to join the firms. They argue that people with IT skills demand higher salaries and perks, which are rarely available in small businesses. Almost half of the SME managers interviewed state that they do not need IT specialists because they can train their own staff to take care of the IT systems:

“I have a few IT specialists in our firm. As e-commerce solution companies, I think we need them to monitor our servers and IT infrastructures to make sure our operations are on the tip top side.”

SME managing director from firm I

“Our firm has a simple website. We do not need web designers. One of our lab assistants has volunteered to maintain the firm website for us. He just came back from training.”

SME manager from firm VII

“IT, nowadays, is across curriculum. So, we don’t need to hire specialist IT staff in our firms. My assistant, for example, can do a lot of things on the computer. She can type our firm

documents brilliantly using Microsoft Word as well as maintain our account using Microsoft Excel. And yet her degree is in Engineering.”

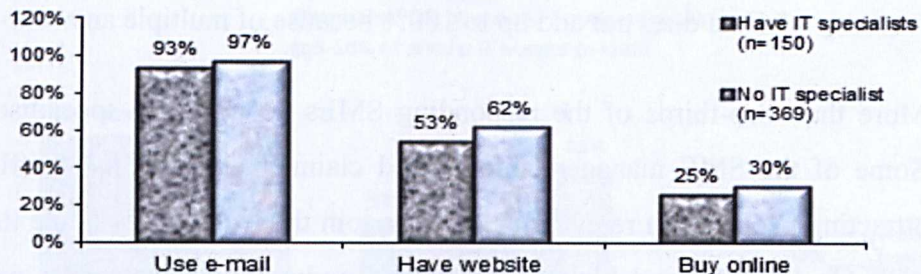
SME managing director from firm IIV

“I am not an IT major. I was majoring in Architecture when I did my first degree in the US. Yet, I managed to set up an IT firm. I managed to get contacts with many other IT firms to update my knowledge and I need to read a lot so that I am aware of the latest technologies. So, I expect my staff will do the same things. I do send my staff for IT training sometimes.”

SME managing director from firm IV

This could be one of the reasons why this study finds that SMEs without an IT specialist in the firm adopt e-commerce more than those with IT specialists (see Figure 8.36).

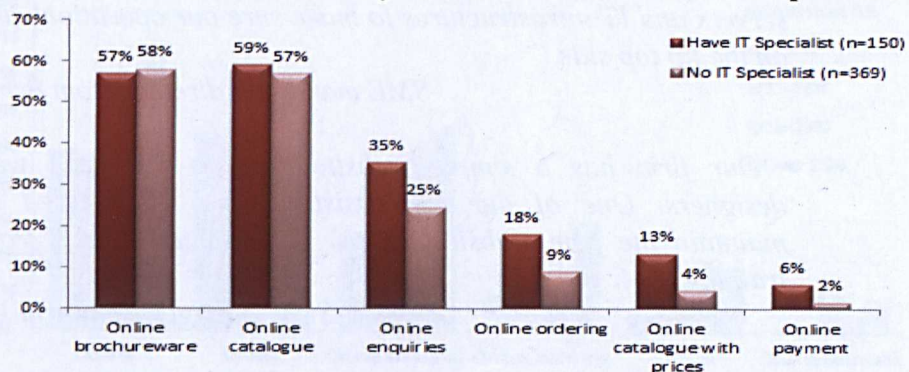
Figure 8.36: E-commerce adoption by SMEs with and without IT specialist staff



Source: survey

Interestingly when come to website activities, SMEs need an IT specialist, particularly in respect of complex websites (see Figure 8.37).

Figure 8.37: Website activities by SMEs with and without IT specialist staff



Source: survey

8.3 CONCLUSIONS

This chapter describes the internal factors that may have influenced SMEs to adopt e-commerce. Five SME manager characteristics (gender, ethnicity, age, education, and experience living overseas) and five SME characteristics (economic sector, location, firm size, firm age, and firm IT resources) were investigated. Descriptive and crosstab analysis between the internal factors and e-commerce components, and website activities, confirmed some pattern association. Qualitative data gathered in the interviews help researcher to get detail information of the issues being studied.

CHAPTER 9

FINDING III: THE EXTERNAL FACTOR - THE INFLUENCE OF GOVERNMENT

9.0 INTRODUCTION

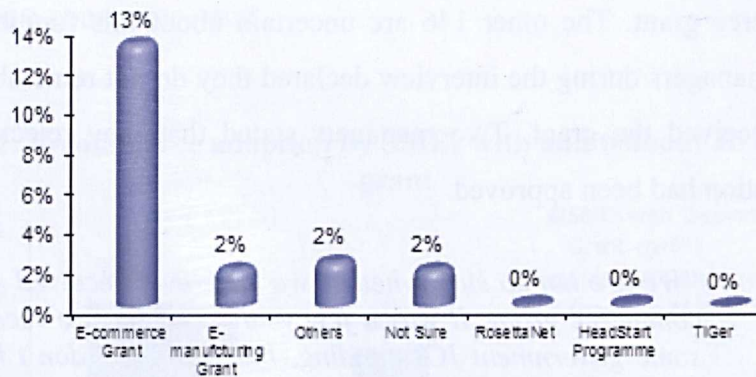
The previous chapter presented finding of the internal factors that facilitate the adoption of e-commerce by SMEs. This chapter, on the other hand, looks at an important external factor that influences SMEs to adopt e-commerce – governmental support (as argued in Chapter 3). The first section of this chapter presents findings, mostly obtained from the survey. It presents findings about SMEs that received the government ICT funding and about SMEs that received an e-commerce grant to adopt e-commerce. The second and third sections of this chapter present data from the interviews with government officials and SME managers. They present the findings about government officials and SME managers' views on government ICT policy programmes, specifically the e-commerce grant.

9.1 GOVERNMENT ICT ASSISTANCE

9.1.1 Government ICT Funding

As stated in Chapter 3, governments everywhere believe that ICT is a key driver for economic growth and makes a significant contribution to the social fabric of a country (Taylor and Murphy, 2004; Newton, 2006). Thus, many governments have invested heavily in ICT in the hope of economic development. This study found that of 522 responding SMEs in the survey, only 103 (not even 20%) stated they received government ICT funding. To expedite ICT usage, particularly e-commerce, among SMEs in the country, the government, through SMIDEC, has designed numerous ICT policy initiatives. Among these are the e-commerce grant, the e-manufacturing grant, the HeadStart programme, the RosettaNet programme, and the TiGeR programme. Figure 9.1 shows the proportion of SMEs receiving these government ICT funding.

Figure 9.1: Proportion of SMEs receiving government ICT funding (n=522)



Source: survey

Figures do not total 100% because of multiple answers

Of 522 respondents to the survey, only 69 (13%) had ever received e-commerce grant funding, and only 10 (2%) had ever received an e-manufacturing grant. Other ICT programmes have had about no influence on the SMEs in this study. Only 2 SMEs had received RosettaNet and HeadStart programme funding, and no SMEs had received TiGeR programme funding. Twelve SMEs (about 2%) claim that they had received other ICT funding, and 10 (2%) SMEs, apparently with ICT funding, are unsure what assistance they received. Some of the SME managers interviewed claimed that they had received some government funding before, yet they were not aware about it:

“I don’t bother what kind of assistance the government has designed. When there is an opportunity given to SMEs like us, we just grab it to show our interest in the government’s plan.”

SME manager from firm II

“I remember we applied for ICT funding from the government previously, but I am not sure what kind of funding it was.”

SME managing director from firm VI

“Who cares what kind of funding it is? As long as we got some money from the government, it is good enough.”

SME manager from S

9.1.2 SMEs That Received an E-commerce Grant Funding

There are 522 SMEs participating in this survey. Of these, 215 (41%) are listed on the SMIDEC database (the list of SMEs that have received an e-commerce

grant). Only 69 of these 215 respondents admit to ever having received the e-commerce grant. The other 146 are uncertain about this funding. Some of the SME managers during the interview declared they do not remember whether they ever received the grant. Two managers stated that they rejected it after their application had been approved.

"We are not so sure whether we have ever received an e-commerce grant. It was a few years ago that we received some government ICT funding, but we really don't know the grant's name. We are unable to retrieve information regarding this matter. We are so sorry."

SME manager from firm N

"We applied for the e-commerce grant funding at the beginning, and our application was approved. However, we then decided to reject the offer because of the rigid conditions."

SME managing director from firm V

More than four-fifths of the 69 SMEs with an e-commerce grant (56 SMEs) are from the manufacturing sector, satisfying the terms and conditions of the grant (see Chapter 3). Many of the remaining 13 SMEs are in the service sector but are manufacturers as well.

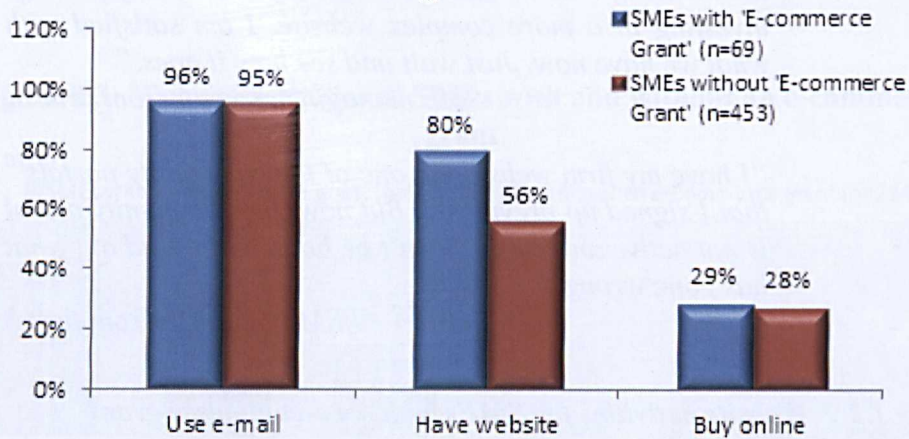
Most SMEs that received the e-commerce grant have between 10 and 50 employees. Surprisingly, more than three-fifths of the 69 respondents (44 SME managers) are Non-Bumiputra: 40 are Chinese and 4 are from other ethnic groups. Only 25 are Malays. The Non-Bumiputra dominates the government e-commerce grant.

9.1.2.1 E-commerce adoption among SMEs with an e-commerce grant

All 69 respondents that definitely received an e-commerce grant have an Internet connection, but only 47 (68%) think the Internet important. Most of these SMEs regarded the Internet as a source of information, but not a platform for doing business. Almost 97% of these respondents used e-mail in their businesses. Four-fifths of the 69 SMEs had websites, but only 24 (35%) bought online.

Figure 9.2 displays e-commerce adoption by SMEs which received and did not received an e-commerce grant.

Figure 9.2: E-commerce adoption by SMEs with and without an e-commerce grant



Source: survey

It is expected that SMEs with e-commerce grant funding adopt more e-commerce because the grant was given to encourage SMEs to adopt e-commerce. Results show that most SMEs used e-mail regardless of whether they received or did not receive an e-commerce grant. There is also no difference between these two groups in their propensity to buy online: SMEs without an e-commerce grant buy online as much as SMEs with the grant. However, SMEs with an e-commerce grant are more likely to have websites than those without a grant. The Chi-square value is 0.041 ($p < 0.05$), which indicates that the difference is significant. Perhaps this is because one of the conditions of an e-commerce grant is that recipients have websites.

Of 69 SMEs that received e-commerce grant, 55 (80%) have websites; while another 14 SMEs claim that they do not have a website. This result is surprising if they have received an e-commerce grant. The question is what had happened to the money that these 14 SMEs had received. Did they utilise it to set-up a firm website or did the money go elsewhere? Interestingly, some of these SME managers during the interview state that they were uncertain whether their firm websites are still operating on the Internet.

"I am not sure whether my firm website is still accessible. I applied for the e-commerce grant a few years back and I signed up with one of the e-commerce solution providers. But, on top of the government subsidy, I have to pay more than RM5,000 to have my firm website listed. But, I have never used it. Just to let the people know that we exist. At the moment, I don't want to waste my money anymore by investing in a more complex website. I am satisfied with what we have now. Just wait and see how it goes."

SME managing director from firm IX

"I have my firm website on one of the community portals¹⁰ that I signed up previously. But now, the community portal is not active anymore. I can't be bothered to find out what has gone wrong."

SME manager from firm S

9.1.2.2 Website activities for SMEs with an e-commerce grant

Out of the 55 SMEs with websites, 29 (42%) already had firm websites before they received the e-commerce grant. The question is why they applied for assistance to create websites if they already had websites. Some of the SME managers during the interview stated that they just wanted to try their luck. Four SMEs thought that the government funding was to help them to improve their websites:

"We are not sure about the contractual requirements. Someone told us that we need to have websites before we applied for the grant. We had our firm websites set-up to show the government officer what we already have."

SME manager from firm S

"I remember that the contractual requirement given is fluctuating. So we are not so sure whether we need to have a website first before we apply for the grant. Many of my colleagues applied for the grant and they got it. I tried my luck, and I got it as well. But the money given was not enough to upgrade my website to a better one."

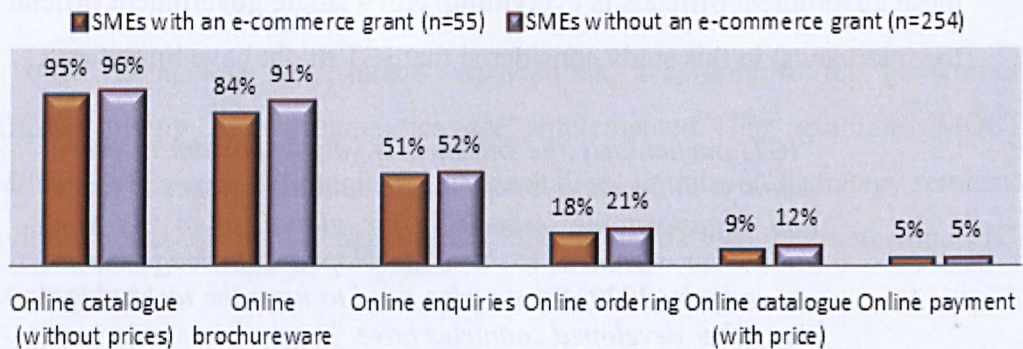
SME managing director from firm IX

Of these 55 SMEs, almost 95% have online catalogues, but only 84% put details about the firm on their websites. These SMEs are no more likely to have websites

¹⁰ A community portal is an individual or firm that provides e-commerce services to SMEs. There are thirteen community portals listed by SMIDEC. An SME with e-commerce grant funding will put its website on one or more of up to five of these community portals (see Chapter 3, pp. 81-82). However, the funding is only for a year. If an SME decides to continue with the portal, it has to pay. Many SMEs did not continue with the service. This may be why some of the community portals were inactive.

than SMEs which did not receive an e-commerce grant (see Figure 9.3). Indeed, many SMEs without the e-commerce grant have more website activities than SMEs with the grant. With or without e-commerce grant, SMEs use websites for little more than providing contact details for the firm and information about the firm's goods and services.

Figure 9.3: Website activities of SMEs with and without an e-commerce grant



Source: survey

Very few SMEs with an e-commerce grant (only 9%) are willing to put the price of their goods and services on their websites and accept online payment (only 5%). Two managers who had websites that accept online payments declared that even when their websites had facilities for online transactions, they had never had one.

“I still wonder how online transactions occur on my firm website. And I just don't know what the customer can buy through our websites. It is not practical at all to sell our product online.”

SME manager from firm A

“There was no online transaction at all during the first year of my firm's website operation. Up until now, there have been no customer orders or payments online. It is ridiculous for me to put in more money to a service I am not going to use.”

SME manager from firm J

9.2 GOVERNMENT OFFICIALS' VIEWS ON GOVERNMENT ICT POLICIES

This section discusses government officials' views on the government ICT policy initiatives. As expected, the government officials in this study have the same views as policymakers elsewhere. They believed that ICT can make a positive impact on organisations and people. With ICT, people will work in a better environment, and Malaysia will become a developed nation by 2020. ICT for these government officials is everything. Not a single government official (during the interviews) in this study considered that ICT might have limitations.

"ICT, particularly the Internet, is very important in every country. It brings a lot of benefits and advantages to firms and organisations, especially for globalisation. As you know, our vision is to be a developed knowledge-based economy by 2020. So, we also need to have the technology that other developed countries have."

Assistant director government ministry (AD2)

"We want to move forward. ICT is the way. We want to make our country as modern as developed countries. Many people outside Malaysia are amazed by our technology. We have the smart card and electronic government, which are very rare elsewhere."

Assistant director government ministry (AD1)

"Our country has developed very fast because of ICT. Look at Putrajaya, a planned city that acts as a new federal government administration centre, which has advanced with ICT. The public workers now work in harmony in this sophisticated environment. See how advanced we are now."

Assistant director from ICT government agency (AD4)

This faith in ICT is to be expected because these government officials work closely with ministers; hence they need to support government policies. Two of the directors in the government ministry during the interviews were very passionate about ICT:

"Our minister is so enthusiastic about ICT. He wants our ministry to be advanced with ICT and in fact to be the ICT champion among all the ministries. We design and

implement ICT as needed. Our ICT planning is done collectively.”

Director of government ministry (D2)

“We want to make ICT, particularly the Internet, ubiquitous, so that the people will increase their productivity. At the moment, research by the consultants shows that we are still lacking broadband infrastructure and cyber laws. So, now we are pumping in more money to overcome these problems.”

Director of government ministry (D3)

In order to achieve government expectations, according to the government officials, many ICT programmes are implemented. For example, MOSTI (Ministry of Science, Technology and Innovation) initiates ICT strategy seminars, inviting heads of public departments and academics to help construct ICT programmes.

“We design a lot of ICT programmes for the people, especially in rural areas. In fact, we are now designing programmes for the agriculture sectors to make them aware about ICT and the Internet, to be specific”.

Assistant director of government ministry (AD5)

“We started the e-commerce programme again last year. I am one of the strategic planners. We believe the people and the industry will benefit from e-commerce programmes.”

Director of government agency (D4)

This result is perhaps to be expected because “when the idea that ICT boosts productivity is fashionable, as it is at the moment, there is lot of interest in funding, commissioning, and publishing studies that show ICT boosting productivity” (Macdonald, 2004, p.103). Surprisingly, though most of these government officials are very confident about ICT, a few have secret doubts about whether the government has undertaken proper ICT planning, and society is sufficiently ready. This was confirmed by two interviews with the government officials’ in-charge.

“Actually, I am reluctant to say that I am from this government agency that designs ICT strategically for the

public and private sectors. A lot of our projects have been questioned. But we have no answers. We sometimes disagree with a lot of things. Many times we oppose the government's irrelevant ICT projects, but most of the time we discover that those projects are carried out. We can only suggest, but the rest is up to the top management to decide."

Assistant director of government agency (D6)

"We have almost everything ready: network and infrastructure. We are ready for a more sophisticated environment physically. However, mentally the people are not ready yet. So, we are now creating ICT awareness in society. But, we are not sure how long this will take."

Assistant director of government agency (AD7)

One of the SME managers in this study, previously a director of one of the government agencies, criticised some of the government policies that have been implemented. Although he agreed about the potential of some ICT programmes, he was not sure whether the programmes were properly planned. He admitted many programmes were designed in a rush, without considering all the necessary factors.

"Our vision towards ICT is very high. We want to leapfrog to a knowledge-based society with ICT as enabler. However, the basic foundation is still very weak – we don't have local expertise, the basic infrastructure is still weak and even the people are not ready yet. I am afraid that we are controlled by people outside who come here just to make money."

X-director government agency cum SME manager from firm IX

9.2.1 Government ICT Programmes for SMEs

According to one of the directors in government ministry during the interview, there were many ICT programmes developed by various government agencies in Malaysia. Some programmes are targeted at all SMEs in the country, and some are dedicated to SMEs in specific economic sectors, particularly the manufacturing sector. According to one of the assistant director interviewed, many government programmes were championed by powerful individuals and when these people left the agency or ministry, their programmes suffered.

“Projects are usually championed by certain people selected by the government. We have too much re-organisation where these people always change positions to spearhead other ministries and government agencies. Some of them who are still handling some projects are promoted to other ministries and the projects are sometimes abandoned.”

Assistant director of government ministry (AD5)

It was a bit surprising to know that most of the government officials in this study seemed uncertain just who is responsible for encouraging SMEs to adopt ICT: Many of these government agencies were accusing each other to who should be responsible for SMEs.

“We provide the ICT infrastructure to all organisations, including SMEs. But I am not so sure who handles ICT programmes for SMEs.”

Director of government ministry (D1)

“We handle the SMEs for the country, but not all SMEs. Some other agencies have their own SME programmes and also their own entrepreneur development programmes for SMEs. MATRADE has its own awareness programmes for SMEs as well.”

Director of government agency (D4)

Policymakers were often not aware of other ministry and agency programmes. Two of the government officials in this study admitted that many of the government programmes were overlapping, even within the same ministry. Each ministry and agency had its own ICT agenda for SMEs.

“They create so many ministries in such a way they forget about overlapping. There is a lot of redundancy and overlapping among ICT projects for SMEs. But, this is normal among the developing countries. At least we have some programmes to work on for the people.”

Assistant director of government ministry (AD2)

Most surprisingly, three of the government officials during the interview also claimed that SMEs were reluctant to apply for the ICT funding. They claimed they needed to go direct to the SMEs to advise them about government initiatives.

They needed to convince the SME owners to apply for funding and show them the process step-by-step.

“The government is so generous. We design a lot of ICT initiatives to help SMEs. But SMEs are reluctant to come to us to ask for money. We have to go to them and help them.”

Assistant director of government agency (AD6)

“We just came back from visiting a few SMEs in the country. It is so tiring. We need to show them all the government subsidies to help SMEs. We even need to sit with them to show the benefits to be gained if they apply for our ICT assistance. Even so, some of them were so unreceptive.”

Director of government agency (D4)

“A lot of ICT funding for SMEs is wasted and not fully utilised. We don't know why this is happening.”

Vice President of government agency (VP)

Two of the government officials during the interviews in this study admitted making mistakes. They admitted that most of the ICT programmes for SMEs were planned in a hurry. They said that all government agencies had to utilise whatever allocations were given to them every year. Unused allocations for SMEs had to be returned to the Ministry of Finance at the end of the year. If they failed to utilise the money, the allocation for the coming year will be reduced.

“When we requested an allocation for some new projects for SMEs at the beginning of the year, most of the projects were turned down for various reasons. But when we are not interested in the projects anymore, a lot more funds are given. At this stage, we are required to come up with as many projects as possible for SMEs and make sure the entire fund is fully utilised. This usually happens towards the end of year.”

Director of government agency (D4)

9.2.2 Government E-commerce Grant for SMEs

As expected, the government officials in this study also believed that e-commerce can bring positive impacts everywhere. Three of the top government officials during the interview stated that they believed that every business needs to adopt e-commerce in order to survive in the global marketplace:

"E-commerce is an integral part of our ICT policy. It cuts down on business costs, saves time on delivery and gives opportunity for firms to go international."

Director of government ministry (D2)

"E-commerce is so much easier. Buying and selling can be automated, 24 hours a day and 7 days a week. You don't need to be there, as the e-commerce sites will do everything. It is really cost effective."

Director of government ministry (D3)

"Why do we believe in e-commerce? It is actually quite obvious as you can see. Almost everywhere we hear people and media talk about e-commerce: how e-commerce is an efficient way of buying and selling online. We want our people to be involved in the electronic society. Using e-commerce will increase productivity and efficiency."

Assistant director of government ministry (AD2)

The government officials that responsible for the telecommunication services in the country stated that much government effort and money was spent on measures to support e-commerce in Malaysia. They said that government is putting effort to provide adequate telecommunications services, an appropriate legal environment, secure banking and Internet operations, and also a trained workforce.

"We are very concerned with e-commerce, especially with the Free Trade Zone (FTZ) issues. So, we try to collaborate with other countries to encourage buying and selling through the Internet. We also have collaboration with the United States recently. We are developing the telecommunications infrastructure everywhere in the country. We have also strengthened the cyber laws, particularly the Digital Signature Act and Copyright Act."

Director of government ministry (D2)

"I think we are ready for e-commerce. We have the infrastructure ready. We are enthusiastic with the technology our country has. We can pay online using financial services such as 'Mayban to U'. The Internet is everywhere for the people to use."

Assistant director of government ministry (AD3)

According to a new director in-charge of SMEs during the interview, most government officials responsible for the e-commerce grant had been promoted to

various other government ministries and agencies. Hence, he did not know what happen to the grant. However, he admitted that a lot of money had been wasted on the project, but believed this would not be disclosed. He admitted that there had been no evaluation of the e-commerce grant project and there was no detailed information available. In implementing e-commerce, success should be emphasised rather than failure:

"We want to encourage SMEs to adopt e-commerce. Why do we need to tell the people about failure? If we help ten SMEs to adopt e-commerce, and we have two successes, we are happy. A 20% success rate is fair enough."

Director of government agency (D4)

Some of the government officials in this study blamed SMEs for not fully utilising the funding. They believed the government has done well. They talked about government assistance, and put the blamed on SMEs for not seizing opportunities offered.

"What else do the SMEs want? We have designed many programmes for them. We give them grants, funding and many other things. Yet, they do not appreciate what we have done for them."

Director of government agency (D4)

"We have designed a lot of e-commerce awareness programme for SMEs. We even have an e-commerce website winning program. But we are not sure how SMEs receive it."

Director of government agency (D3)

"We want to help SMEs. But SMEs do not come to us."

Director of government agency (D4)

Some government officials in this study were uncertain about the government e-commerce grant in general. They were not sure how appropriate e-commerce was for SMEs or how receptive they will be. Given that programmes to encourage the adoption of e-commerce by SMEs are for market failure reasons, it is ironic that they expose SMEs to government failure (for which there is no compensation).

The policymakers who design the e-commerce programmes for SMEs have very little idea how SMEs might use e-commerce in their businesses. Despite these

uncertainties, it was interesting to know that these policymakers were still planning more e-commerce programmes for SMEs.

"I am not sure how SMEs can sell valuable items on the Internet. Even items like shirts and trousers are still difficult to buy online. We need to visualize and to feel it first before purchasing. But, we still need to encourage SMEs to use e-commerce. So, we need to plan good e-commerce programmes for them."

Assistance director of government agency (AD5)

"There are so many issues regarding SMEs. We have many plans for them. For example, we had an e-commerce strategic programme for SMEs a year ago, but it is still pending. I am the one who should head that project. Yet, I am very busy attending meetings and going out-station."

Director of government agency (D2)

9.3 SME MANAGERS VIEWS ON GOVERNMENT ICT POLICIES

Despite what been claimed by the government officials interviewed, SME managers have different views. They claimed that information about government ICT programmes was not available. They stated that the government did not promote its schemes. Most of the time, those SMEs that were close to the government or policymakers got most benefits. Some SME managers reported that, even if they got information about government ICT programmes, either some of the programme design were not suitable for them or they were not sure who to see and how to get funding. Some managers who tried to get funding were disappointed with the bureaucracy in government offices. They needed to fill in many forms and waited a long time to meet the officer in-charge. Even then, there was no guarantee of assistance. Some managers during the interviews were also disappointed with the promise that policymakers made on leaflets and websites. They felt the government requirement for them to submit applications online was not sensible because there was still a mass of paperwork offline.

"They put the information on the website and they display it as if it is so easy to apply for the grant. We need to go through massive paperwork and we even need to have collateral. But there is no guarantee we can get the grant."

SME manager from firm X

"Yes, the government says that they have a lot of grants for SMEs like us. But, to apply for the grant is crazy. I need to travel many times to meet the officer in-charge. Sometimes they pass us from one officer to the other and we need to explain to them again why we are there. It is just like begging to them."

SME manager from firm K

"Government says that they are sincere in their wish to help SMEs, but I am not sure whether they are sincere enough."

SME managing director (survey)

According to one of the SME managers, SMEs were often dependent on what they are told by the government and the media. When the reality was different from what they are told, SMEs were the ones who suffered:

"Our firm had a very bad experience with the government ICT project. We were given hardware from supplier A, software from supplier B, a network card from supplier C, and the assembly was done by supplier D. When the system did not work, we contacted supplier D. But supplier D blamed the hardware problem. Supplier A blamed supplier B and so forth. In the end, we went back to our old system because we don't have time to deal with this".

SME managing director from firm VI

Some other SME managers blamed the government for poor planning. They said most government programmes were designed abruptly and there was no assessment on these projects. Many SME managers felt that the government should evaluate the programmes they designed for SMEs. The government should not regard the grant as 'one shot assistance'. It cannot just give funds and then backed off.

"Do not expect government to help. They just plan without thinking and claim they have helped SMEs. So, just do the best yourself."

SME manager (survey)

"The government should follow up with the firms who received their grants. Then they would realise what problems arise after the e-commerce grant has been spent."

SME manager from firm II

"We got the grant. We have our website online. So what?"
SME manager from firm E

"The government says that it wants to help us. But, it gives us very little and it is usually once and for all."
SME managing director from firm II and IX

Though many SME managers stated they were not really fond of government assistance, those who had funding believe they needed still more government assistance. This was confirmed by some of the managers interviewed:

"We really appreciate with the government effort to help the SMEs in providing funding and assistance. We believe by giving more funding, SMEs like us can improve ourselves."

SME manager from firm II

"I think government funding and assistance are necessary for SMEs. At least the government are aware of our existence. However, to my understanding there were many SMEs that did not fully utilise the funding. I would personally feel it was a waste of government funding. I think government should provide assistance to those who really need, but failed to obtain these grants and funding."

SME managing director (survey)

"To have contact with government is important. We need support and injections from the government to survive."

SME manager from firm E

9.3.1 SME Managers Views on Government E-commerce Grant

Out of 69 SMEs that received the e-commerce grant, more than half (54%) claimed that the grants had been either important or very important to their business. SMEs that received government ICT funding were generally keen on government ICT funding for SMEs. However, many SMEs during the interviews claimed that the e-commerce grant funding was insufficient to allow their firms to use their websites for complex activities. They had to top-up what the government offered with their own money, particularly in setting up an online payment system. In addition, they also had to pay the financial institutions arranging electronic transactions. Furthermore, they also had to pay more to the

e-commerce community portal providers if they wanted to have a user-friendly website.

"The e-commerce grant is not adequate and not flexible at all. Why do we need to use the government e-commerce community portal providers? Why can't we use our own portals? Yes, the government claim they want to help us. But, why is the grant so rigid?"

SME manager from firm I

"There are so many e-commerce packages offered. But, of course we have to put more money in if we want better ones."

SME manager from firm IX

"We thought the grant is enough to set-up an online payment system. But, it is not. There are so many packages. We finally chose the simplest one."

SME manager from firm VI

"They said that they will pay for the e-commerce project, but I couldn't recall the amount. But what we discovered after that was that we need to top up even more to join the e-commerce portals. My advice for other SMEs that want to apply for any government grant is to read carefully the terms and conditions. The government is not always generous."

SME manager from firm J

Many of the SME managers admitted that they did not really want the e-commerce grant funding. What they really wanted was a better relationship with the government.

"We need to show that our firm has a website to apply for the e-commerce grant. We take this opportunity to have some relationship with the government."

SME managing director from firm II

"Do you think it is easy to get funds from the government? There is too much bureaucracy. Yet we need to apply to create rapport with them."

SME manager from firm E

"I believe we need to have a good rapport with the government. One way is by getting involved in government projects. You need to be smart to be a part of the teams."

SME managing director from firm I

“One way to get the government project is to know those who are in-charge in that particular project. Once you get to know the people there and they know you, it will be easy for you.”

SME managing director from firm IX

Some of the SME managers claimed that the e-commerce grant funding was essential, while others declared it useless.

“We appreciate that the government provides funding to help SMEs to set up e-commerce facilities. However, it is my understanding that many of these SMEs do not fully utilise it. They just simply set up a website without updating or maintaining it. I personally feel it is a waste of the funding provided by the government.”

SME managing director (survey)

“Some of the government assistances are good, but maybe they are too rigid.”

SME managing director from firm II

9.5 CONCLUSIONS

This chapter describes the external factor that is the government support that may have influence SMEs to adopt e-commerce. This chapter explores issues about government ICT funding, specifically the e-commerce grant funding for SMEs. Descriptive and crosstab analysis between e-commerce grant and e-commerce component, website activities, showed some pattern association. Views both from government officials and SME managers are presented. Qualitative data gathered in the interviews have helped the researcher to get detailed information on the issues being studied.

CHAPTER 10

FINDINGS IV: REASONS FOR AND BENEFITS OF E-COMMERCE

10.0 INTRODUCTION

This chapter presents the findings from the fourth research question in this thesis, that is: to find the reasons for and benefits of e-commerce adoption among SMEs in Malaysia, specifically to find what is the most important reason for adopting e-commerce and the benefit of adopting it. Both reasons for and benefits of the adoption of each of e-commerce components were explored in this study: reasons for and benefits of having e-mail and buying online were explored during the interviews, while reasons for and benefits of website adoption were explored both in the survey and during the interviews with SME managers. Quotation about reasons for and benefits of e-commerce were mainly gathered from the interviews with ten SME managers who adopt all the three e-commerce components.

10.1 REASONS FOR E-COMMERCE ADOPTION

10.1.1 Reasons for Having E-mail and Buying Online

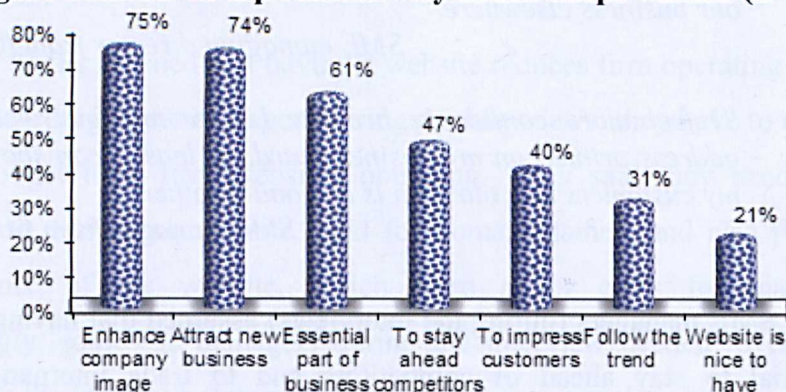
Many times, reasons for having e-mail and buying online were similar among the respondents during the interviews. E-mail is widely used among SME managers in this study. Many SME managers (during the interviews) said they have e-mail already installed in their businesses. Some of them used free public e-mail addresses that are readily available, such as Yahoo mail and Google mail. Many managers said that they have e-mail because it is part of business communication nowadays. Some common reasons of having e-mail given by SME managers during the interviews were: e-mail is easy and convenient to use, e-mail eases communication with their employees, customers, and suppliers, and e-mail allows SME managers to arrange meetings with their employees.

With regard to online buying, those SME managers during the interviews stated that online buying is an alternative way of traditional buying. Manager said they did not need any websites to buy online. They can buy online anytime and anywhere as long as they are connected to the Internet and trust the website. Four managers that have bought online before stated among the reasons they bought online were: to buy items which are not available locally, to buy things at their own time and place, and to save time and cost.

10.1.2 Reasons For Website Adoption

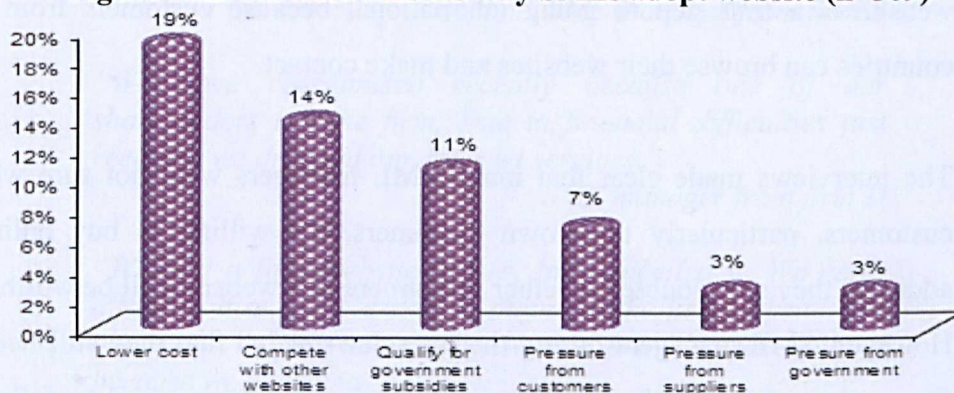
A list of reasons why SMEs adopt and use website was given in the survey. Of 522 respondents, 309 stated they have firm websites. Figure 10.1 and 10.2 shows the reasons why these 309 SME managers adopt and use website based on the frequency in the survey.

Figure 10.1: Seven top reasons why SMEs adopt website (n=309)



Source: survey

Figure 10.2: Six least reasons why SMEs adopt website (n=309)



Source: survey

Almost three-quarters of these 309 SMEs state that the most important reasons for having a website are to enhance firm image (75%) and to attract new businesses (74%). Almost 9 out of 10 SME managers during the interviews said that website will improve the image of their firms. SME managers were pleased to have a website address on their firm stationery and on their business cards. They claimed that an Internet address would establish credibility in the eyes of actual and potential customers. This, according to the managers, may lead to more business.

*"Oh yes, we have our firm website. The website address is written on my business card. We have put all information about our firm on the website. Feel free to access it anytime."
SME manager from firm V*

*"I think to have a website is important for the firm image. It is just like having a shop online. I can show the customers that we are aware of the current trend. We also need to show the world our products and services so that we can open up our business elsewhere."
SME managing director from firm I*

*"I feel more confidence because I have my firm website address printed on my business card. At least I can show to my customers that our firm is as good as others."
SME manager from firm VI*

Many SME managers (during the interviews) assumed that having a website is essential to stay ahead of competitors and to trade internationally. They believed firms without websites will be left behind in the marketplace. Managers said they do not want be left out. Some managers also stated that a website is a first step to going international because customers from other countries can browse their websites and make contact.

The interviews made clear that many SME managers were not sure whether customers, particularly their own customers, are willing to buy online. In addition, they also doubted whether investment in a website will be worthwhile. However, SME managers during the interviews stated that they still needed a firm website because they need to impress their customers and to follow the

market trend. According to some of the managers, a website is predominantly a fashion good.

"We need to show the people out there that we have what other people have. In fact, we want to have more than other firms have. Well, everybody says that a website is a must for every business."

SME managing director from firm IX

"I am not really sure whether we should invest in a website. There are so many uncertainties out there. We don't know whether the investment and the time spent are really worth it. Yet, everyone else is having one. So, we are caught between a rock and a hard place: we need to have it so that we are not out-dated."

SME managing director from firm J

"Having a firm website has boosted my confidence. I can show people that we are aware of the latest trend. But we do not offer online transactions as yet."

SME manager from firm II

Very few SMEs claimed that having a website reduces firm operating costs (only 19%). According to the managers during the interviews, they have to spend more money to get their firm websites operating. They said they needed to hire someone to design the website, paid for domain names, and also paid for the maintenance of the website, which were major costs for many SMEs. Surprisingly, some the managers during the interview needed to cut off their firms from the Internet because they could no longer pay their bills.

"Lower cost? No way. We have to spend more because we have got to pay for the services."

SME manager from firm X

"We have reorganised recently because one of our shareholders left the firm. Due to financial difficulties just recently, we dropped our Internet services."

SME manager from firm D

"We had a firm website before, but cancelled it. We can't afford to hire an IT expert to maintain the firm website. We also can't afford to pay the service provider for nothing because we hardly used it."

SME manager from firm K

This study also found that neither government subsidies (only 11%) nor pressure from stakeholders (only 7%) were important reasons for SMEs adopting websites. It can be speculated that this may be because SMEs in this study are unlikely to be suppliers to large firms (as discussed previously). Many SMEs are not installing complex websites (e.g., website with online payment facilities) even though they have received government subsidies to do just this (as described in Chapter 9). SME managers said they were willing to invest in complex websites only if they were convinced these websites are really needed.

“Government can make what rules and regulations it likes. At the end of the day, we are the ones who need to deal with our business. They can make us have websites so that we can bid for government projects. But, that is it. I don’t think this is the right way to encourage SMEs to use e-commerce.”

SME managing director (survey)

“At the moment, I don’t think having websites will increase my sales. Many of my friends have invested in websites with online payment, but they don’t gain anything. I will invest in this technology when I think that I really need it. I am not sure when; maybe in ten or twenty years.”

SME managing director from firm E

SME managers said they scarcely have time to compare their website performance with that of other firms. They did not even have the resources to compete in terms of website sophistication. So, many SME managers said they only manage to opt for a cheap package or no website at all.

“There are so many website packages offered by the e-commerce service providers. We cannot afford to have the most advanced package. We finally opted for the simplest and cheapest package available.”

SME managing director from firm L

“We chose the most reputable e-commerce provider that the government listed to design our firm website. We provide the details about the firm. The rest is up to the provider to design our website according to the budget agreed.”

SME managing director from firm VI

During interviews, it became plain that many SME managers still felt they have no need for websites, particularly a website with online payment facility. These managers argued that websites do not mean that firms can provide better products and services to the customers. These managers believed they could serve customers better by traditional methods, such as face-to-face interaction. Managers preferred to take orders by facsimile, text messaging or telephone. For them, the most important thing is to provide efficiency and good quality services.

"We survive with our own ways of doing business. We have our own systems. We don't need to do e-commerce. Our priority is giving the best and the fastest service to our customers. Our price is a bit high, but our service is superb."

SME managing director from firm Q

"A fancy website does not mean excellent service. For us, the customer is king. So, we will try to satisfy them as best we can."

SME managing director from firm O

10.2 BENEFITS OF E-COMMERCE ADOPTION

10.2.1 Benefits of Having E-mail and Buying Online

Many managers during the interviews said that e-mail is the most convenient way to communicate nowadays, particularly with their employees. They can call for a meeting using e-mail and sometimes they can even send letters through e-mail. According to most of the managers, e-mail has created an efficient and flexible environment with their employees. They can contact their employees anytime and share information without a face-to-face meeting. It is interesting to know that most of SME managers claimed that the first thing that they did when entering their office was to check their e-mail before they proceed with their work. Some of the SME managers said that they 'feel lost' when the Internet is down because they cannot check their e-mail.

"E-mail is a common medium for communication nowadays. I use a lot of e-mail in my business. I even send messages to my employees from time to time to encourage them to use e-mail and to communicate with me."

SME managing director from firm O

"I think e-mail is just fine for our firm. Each of our employees is given their own e-mail address. We call our employees to meetings by sending e-mail to them."

SME managing director from firm IV

"I like e-mail. It has eased my communication with my employees. I sometimes make a decision to purchase anything online after discussion with my employees through e-mail."

SME manager from firm L

"E-mail? It is a necessity. I use a lot of e-mail and even access my e-mail through my telephone if I am not at my computer. I am very used to e-mailing, and I just feel lost if I cannot access my e-mail, even though it is only for one day."

SME manager from firm V

Many SME managers insisted that e-mail has eased their communication. They said that e-mail enables them to distribute messages to large groups of people more efficiently and more clearly. Although they believed that e-mail benefits their businesses, some SME managers still thought that urgent messages should not be sent by e-mail, but by telephone or SMS to cater for those that do not open their e-mail regularly.

"E-mail is probably the most efficient, inexpensive and convenient way to communicate. I think it saves paper and time to distribute information to my employees and my customers."

SME manager from firm X

"I communicate with my employees, customers and suppliers through e-mail. I usually send brochures and vouchers to my customers through e-mail. But if there are urgent matters, I am more comfortable making a phone call ..."

SME manager from firm V

"I think e-mail has saved me a lot of time. I don't have to write to many people many times. I usually distribute my e-mail to multiple recipients. But, when it comes to urgent matters, I am quite sceptical. I will ask my secretary to contact the people that I want to meet via telephone or SMS."

SME managing director from firm IV

Many SME managers have started using e-mail to promote their goods and services to their customers and potential customers. This can be done, according

to the managers, by sending flyers or leaflets via e-mail attachments. Many managers also claim that these have lowered their advertising costs.

"I send flyers and advertisement to my customers using e-mail attachments. There is so much more that can be done using e-mail. I have yet to explore its potential due to my hectic schedule. But I believe this is what we need at the moment."

SME manager from firm VIII

Benefits of buying online were also explored from the ten e-commerce adopter managers during the interviews. Managers who bought online said the benefits that they gain were convenience and flexibility. SME managers remarked that they did not have to travel or be kept on hold on the phone to buy things. They can compare prices of goods and services when the intended to buy online. They can simply fill in an online form, get a quote and pay at the same time. This saves a lot of time. SME managers also stated that they can buy online whenever they like because online shops do not have fixed working hours. Some SME managers find online buying an enjoyable release, especially if they buy in a bidding system, such as eBay.

"I think one of the benefits of online buying is to buy products and services that we cannot get in this country. It is good to have opportunities to buy things overseas. We usually buy things only from reliable websites."

SME manager from firm III

"I buy airlines tickets and book hotels online. I think this is really convenient. I sometimes get cheaper deals online, especially when the firms have promotions. The firms usually send my confirmation via e-mail. So, I just print my e-mail and show it at the airline ticket counter or to the hotel receptionist."

SME managing director from firm I

"Whenever I am stressed at work, I usually browse the eBay website. I enjoy bidding for items. Sometimes I buy items for my firm and sometimes for myself. I have only won the bidding two times. Most of the time I buy items that do not need bidding. I think online buying is fun."

SME manager from firm X

According to the managers interviewed, another benefit of online buying was it has opened up opportunities for them to look for products and services not available locally. However, if they needed products in bulk, SME managers felt online buying was not useful. SME managers stated that online buying cannot persuade their suppliers to give them a better deal. Some firms, SME managers say, did not have the products their websites claim.

“Not all websites can be trusted. Some firms have very fancy websites and yet they are useless. Some firms have very simple websites or no website at all, but they give a good deal.”

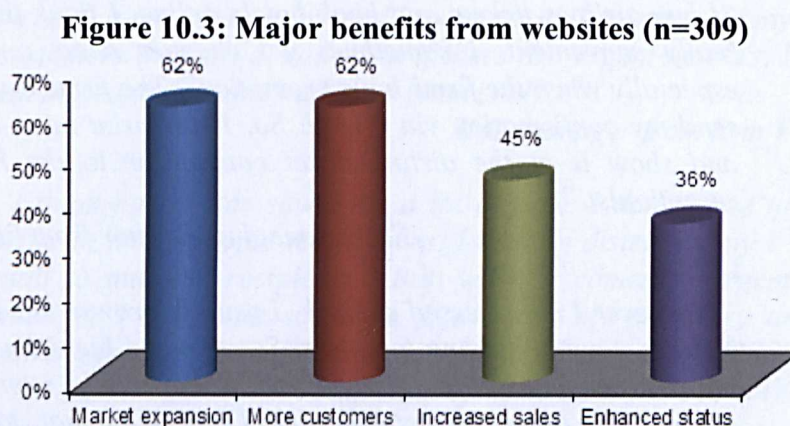
SME managing director from firm I

“We don’t know who is on the other side of the Internet. Never trust any websites until you get to know them.”

SME managing director from firm N

10.2.2 Benefits of Website Adoption

Of 309 SMEs with websites, 272 (88%) claim that they received some sort of benefit from the adoption. This study found four major benefits that SMEs in the survey said they have gained from using websites: market expansion, more customers, increased sales, and enhanced status. Market expansion and more customers were gained by almost two-thirds of SMEs with websites (see Figure 10.3). More than half of the managers interviewed said they have gained some benefits of having websites.



Source: survey

“We have more customers now. We get many questions from customers all over the world. So, I think we have managed to

expand our market outside the country by having a website. We receive overseas orders, but we only deliver our products in the Klang Valley area. We need to expand our services so that we can get more customers."

SME manager from firm VII

"I do believe we can expand our market to the world. There are many of our local products which are unknown elsewhere. We need to penetrate this opportunity. I have sold some of my products to people in Australia and the UK."

SME managing director from firm V

Interestingly, managers who believed that their market has expanded were still uncertain whether these benefits come from having websites.

"We have a counter system on our firm website. We can trace the numbers of customers that visit our website. So far, we have more than 20 visitors every day. But I am not so sure if they are new customers."

SME manager from firm VIII

"I am not so sure whether our business expansion is due to having a website. Our website is just another marketing strategy. We also advertise our products and services by sending brochures through e-mail and other electronic media. I have some customers who used our 'online enquiries' service. They only want to know the price of our products and also promotions."

SME manager from firm V

Nearly one half of SMEs with websites claimed that their sales have increased since they introduced websites. However, the interviews confirmed that many of these managers were actually not sure whether the increase is attributable to the websites.

"Increased sales? I am not so sure. Maybe yes and maybe not. We do sell online but very limited. We have yet to keep track of our online selling."

SME managing director from firm IX

"Sales? Oh yes, we increased our sales after installing the firm website. We have more customers now than before. But, we are not sure how much we gained from the Internet sales."

SME manager from firm III

"We understand that having a website is essential for business expansion, operational cost reduction and increased productivity. But there is lack of critical mass. How are we going to increase our sales with this method?"

SME manager from firm N

"Increased sales? I don't think I have gained any sales from our firm website. But I used the Internet a lot to get information from other websites."

SME manager from firm P

Enhanced firm status (36%) can also be considered among the major benefits that these respondent SMEs claim they have gained. SME managers felt that a website address on a business card is important, especially when they attend seminars and conferences. Customers, vendors and stakeholders were always enquiring whether they had a website address.

"We have our firm website. You can visit our website and look at the products and services we offer. The website address is on my business card. If you have any questions, feel free to e-mail me. Please tell your friends about our firm and I will give them the best quotation."

SME managing director from firm IV

"I think websites are crucial for future business development and expansion. Having a website has enhanced our firm status."

SME manager from firm II

"People will look down at you if you still don't have a website. Having a website and putting the address on my business cards makes me feel good. It shows the customer that your firm is aware of the technology."

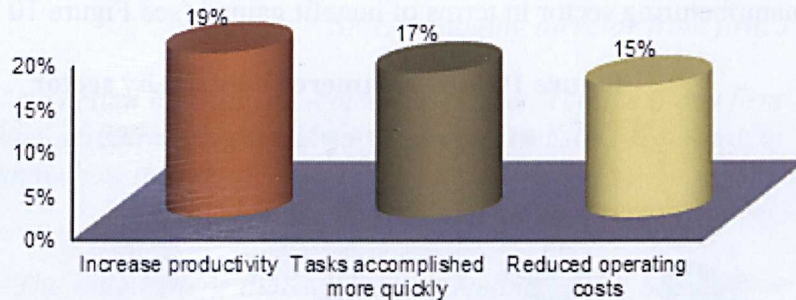
SME manager from firm V

"I am proud that one of my staff has designed a firm website. We launched our website a few years ago. It is so good to show to our customers that our firm has technology that other firms have."

SME managing director from firm VI

In addition to the four benefits, this study also found other benefits from having websites. Only a few respondent SMEs stated that websites have increased productivity or reduced operating costs nor have many of these SMEs increased their revenue or accomplished tasks more quickly (see Figure 10.4).

Figure 10.4: Other benefits from websites (n=309)



Source: survey

Interestingly, some SME managers during the interviews were not able to say just how the website has brought benefits. Their firms operate much as ever, with or without websites. They felt that their communication with customers and suppliers has improved with the use of e-mail, but they were much less certain in attributing benefits to the firm website.

“I don’t know what you mean when you say that a firm can increase productivity by having a website. My firm is still running as usual with or without the website. Having a website is just part and parcel of the business nowadays. You need to have a website if you are running a business. People want to know whether your firm keeps up with the trend.”

SME manager from firm L

“Don’t kid yourself about cost reduction. I think I have to pay more to the e-commerce solution provider to maintain my website than if I were to maintain it myself. I don’t have enough time and skill to do so. I still need to hire a web designer. Yet, e-commerce is not my firm priority. In fact, I have never sold online before. Yes, I need to have a website to bid for government tenders. That is the regulation.”

SME managing director from firm S

“I don’t see having a website can increase my firm productivity. E-mail maybe, but definitely not a website.”

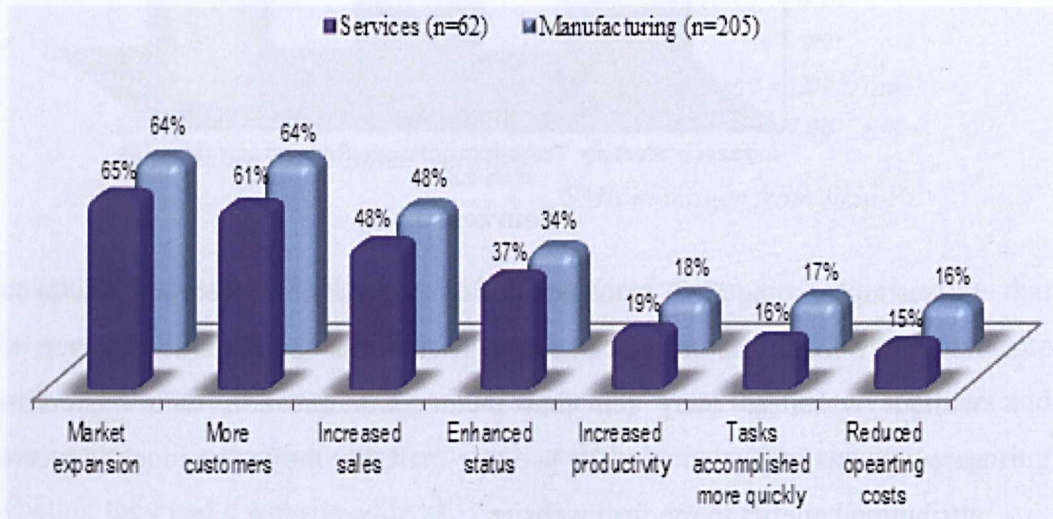
SME managing director from firm F

“I am not sure what the benefits of having websites are, except for self-satisfaction... We want to know, for example, what are the productivity and annual returns/sales gained by SMEs from having websites. So far, we have not got that yet.”

SME manager from firm M

This study also found that there is not much difference between the service and the manufacturing sector in terms of benefit gained (see Figure 10.5).

Figure 10.5: E-commerce benefits by sector



Source: survey

The cross tabulation graph above shows that SMEs in the service sector gain e-commerce benefits as much as SMEs in the manufacturing sector. The Chi-square test confirms this ($p > 0.05$). This result conflicts with other studies that claim SMEs in the service sector reap most benefits from websites (*cf. Boyd et al., 2007*).

Of 309 SMEs with websites, 35 SMEs (11%) stated they do not receive any benefit at all from having websites, particularly complex websites. Most of these SMEs are from the manufacturing sector. These SME managers (during the interviews) felt that having a complex website is a waste of money and energy. They said very few customers and potential customers have ever used the online enquiries form they put on their firm websites. In addition, they said nobody at all has used the online ordering and online payment facility that SMEs in this study offered. Many SME managers claimed that having a website as just another form of marketing, which may or may not benefit the firm.

“We installed our firm website a few years back. We were so enthusiastic at the beginning and my staff accessed it every day to see the response from customers. But nobody ever asked us about our products through the website. In fact, now we need to advertise our firm website on leaflets and in

newspapers. There is no point having a website if nobody wants to use it."

SME managing director from firm J

"No actual benefits of e-commerce as yet. Tell me if any firm has actually benefited from having a website. We want to know how they do it."

SME managing director (survey)

"The only benefit that we have is feeling proud because we have a firm website address on our business card so that we can tell the customers to look at it. But most of the time my customers e-mail or phone us to ask for the service."

SME manager from firm N

10.5 CONCLUSIONS

This chapter explored the reasons for and benefits of each of the e-commerce components usages among SMEs in Malaysia. Both reasons for and benefits of e-mail and online buying were explored during the interviews with SME managers. While, reasons for and benefits of websites were gathered from the survey and also from the interviews. Frequencies of the reasons for and benefits of e-commerce were explored to find the topmost reasons for and benefits of website adoption. Qualitative data gathered in the interviews helped the researcher to get detailed information of the issues being studied.

CHAPTER 11

FINDINGS V: THE NON-ADOPTERS OF E-COMMERCE

11.0 INTRODUCTION

The findings of the survey and data gathered during the interviews with the e-commerce adopters SMEs were analysed and discussed in Chapters 7 to 10. The survey suggested type of e-commerce components and website activities used by SMEs in this study, some factors that may facilitate SMEs to adopt e-commerce, the common reasons why SMEs have websites, and the common benefits of websites that SMEs gained after adopting it. Interviews with SME managers who adopted e-commerce confirmed some of the results of the survey and add some new information regarding e-commerce adoption, particularly the government support. However, the survey did not reveal why SMEs did not adopt e-commerce, how and why constraints occurred, and what could have been done to overcome such constraints. Thus, in-depth interviews were also conducted with SME managers who did not adopt all the three components of e-commerce. Eighteen SME managers agreed to be interviewed. The interviews provided an opportunity to explore the non-adopter issues in-depth and gather information on factors not addressed in the survey. This chapter starts with a brief overview of the characteristics of the interviewees (the non-adopters of e-commerce) and their firms. It then analyses major constraints identified in the interviews. Data for this chapter is mainly obtained from interviews with the SME managers.

11.1 BACKGROUND OF THE FIRMS

In-depth interviews were conducted with SME managers who had not adopted e-commerce, or had only partially adopted it. These included SME managers who did not have an Internet connection, did not use e-mail, no longer had firm websites, and also those who did not buy or had stopped buying online. The basis

for selecting the sample was explained in Chapter 6. Twenty-nine SMEs that participated in the questionnaire survey and which stated they had not adopted e-commerce were contacted; twenty-two agreed to be interviewed. However, four decided to withdraw prior to the interviews. A condition for each firm agreeing to participate in the research was that the information provided would be treated in confidence. Thus, names of the firms and individuals involved in the interviews are disguised.

11.1.1 Types of Products

Table 11.1: Firms' main products and services

Firm	Type of firm	Products and services
A	M	Food and crackers
B	M	Coconut and palm industries
C	M	Bakery products, shortening and star fruit
D	M	Beverages
E	M	Plastic motor components
F	M	Automobile manufacturing
G	M	Elastic bands, knit tape, narrow fabric accessories
H	M	Electronic alarm system and engineering services
S	M	Wooden rubber wood furniture
J	M	Motorcycle spare parts and accessories, motorcycles
K	M	Building manufacturing
L	M	Agricultural products and chemicals
M	S	Imaging technology
N	S	IT infrastructure and system integration maintenance
O	MS	Gold and jewellery services
P	MS	IS and IT consultancy, and executive desktop
Q	MS	Health and food supplements
R	O	Building and constructions

Note:

M: Manufacturing
S: Services
MS: Manufacturing and Services
O: Others

As illustrated in Table 11.1, the firms are involved in a variety of products and services, and it is difficult to classify their activities into discrete categories.

Three firms (A, C and D) were involved in food and beverage production. Three firms (M, N and P) were principally involved in IT services. Two firms (B and L) produced agricultural products. One firm (Q) produced health and food supplements. The remaining firms manufactured finished products and some (firms G and S) were subsidiaries of large organisations.

11.1.2 Characteristics of Interviewees

Seven of the eighteen managers were managing directors; six were owner managers and the remainder were managers with principal responsibility for running the firm. Table 11.2 summarises the characteristics of interviewees. Seventeen of the interviewees were male and only one was female. (A number of female managers were approached, in an effort to explore the role of women in online businesses, but the invitees declined to take part.). Only one interviewee was Chinese. (Many Chinese managers declined to be interviewed.). All but two were graduates. Seven interviewees held a business or management degree. Three of them held an MBA (Master of Business Administration) or DBA (Doctorate of Business Administration). Six held Engineering or Science degrees.

Only six of the eighteen interviewees had experience of living overseas for a period of time. Of the six, two interviewees (managers from firm L and firm M) had lived in the USA and the UK for more than one year. With ten of the interviewees aged above forty, the participants were relatively mature.

Table 11.2: Interviewee characteristics

Firm	Age group	Ethnic status	Status	Highest education qualification	Lived overseas?
A	40 - 50	M	OM	Deg. (O)	No
B	30 - 40	M	MG	Dip.	No
C	40 - 50	M	M	DBA	Yes
D	50 - 60	I	OM	Dip.	No
E	40 - 50	M	MG	Deg. (S/T)	No
F	30 - 40	M	MD	Deg. (S/T)	No
G	40 - 50	M	OM	MBA	Yes
H	30 - 40	M	MG	Deg. (B/M)	No
S	40 - 50	C	OM	Deg. (B/M)	No
J	20 - 30	M	OM	Prof.	No
K	40 - 50	M	MD	Deg. (S/T)	Yes
L	40 - 50	M	MG	MBA	Yes
M	40 - 50	M	MD	Deg. (O)	Yes
N	30 - 40	M	MD	Deg. (S/T)	No
O	30 - 40	M	OM	Deg. (B/M)	No
P	40 - 50	M	MD	Deg. (B/M)	Yes
Q	30 - 40	M	MD	Deg (S/T)	No
R	30 - 40	M	MD	Deg. (S/T)	No

Note:

M:	Malay	Dip.:	Diploma
C:	Chinese	Deg. (S/T):	Degree (Science/Technical)
I:	Indian	Deg. (B/M):	Degree (Business/Management)
OM:	Owner manager	Deg. (O):	Degree (Ordinary)
MD:	Managing director	Prof:	Professional qualification
MG:	Manager	MBA:	Master of Business Administration
		DBA:	Doctorate of Business Administration

11.1.3 Firm Characteristics

All of the SMEs in the sample were private limited firms, except for firms C and M which were partnerships. All of them were either family owned or privately owned businesses. Sixteen of the eighteen interviewees were Bumiputra (many Non-Bumiputras declined to be interviewed). Most firms interviewed were smaller SMEs, with between 10 and 50 employees. In terms of location, ten SMEs were in the Central region, where Selangor and Kuala Lumpur are located.

Table 11.3 shows that the sample also consists of older and established SMEs. Sixteen SMEs were more than 10 years old.

Table 11.3: Firm characteristics

Firm	No. of full-time employees	Age of firm	Firm Status	Firm structure	Region
A	20	19	B	Family owned	East coast
B	100	21	B	Private owned	Southern
C	20	15	B	Family owned	Southern
D	20	12	NB	Family owned	Northern
E	50	20	B	Private owned	Central
F	30	17	B	Family owned	Central
G	60	18	B	Private owned	Central
H	30	11	B	Private owned	Central
S	70	15	NB	Private owned	Central
J	15	19	B	Private owned	Central
K	80	20	B	Private owned	Southern
L	16	15	B	Family owned	Northern
M	30	11	B	Family owned	Central
N	45	8	B	Private owned	Northern
O	35	10	B	Family owned	East Coast
P	15	15	B	Private owned	Central
Q	60	13	B	Private owned	Central
R	200	9	B	Family owned	Central

Note:

B: Bumiputra

NB: Non-Bumiputra

11.1.4 Internet and E-commerce Usage of SMEs Interviewed

A series of eighteen in-depth interviews were undertaken to determine why some SME managers were not inclined to use e-commerce in their businesses. Two interviewees (A and B) did not have an Internet connection. Two SMEs (C and D) used to have an Internet connection and e-mail in their businesses. Fourteen of the eighteen interviewees had e-mail. Eleven SMEs abandoned their websites, and the other seven still had simple websites. (A simple website displays only information about a firm and its products and services without any price quotations.) Many of the SMEs in the survey have only simple websites. Out of

309 SMEs with websites, more than half display only information about their firms, and products and services on their websites. Five SMEs had once bought online, but had decided to stop. The remaining firms had an Internet connection and e-mail, but did not have websites and did not buy online (see Table 11.4).

Table 11.4: Internet and e-commerce usage of firms

Firm	Have Internet connection		Use e-mail		Have website		Buy online	
	before?	now?	before?	now?	before?	now?	before?	now?
A	No	No	No	No	No	No	No	No
B	No	No	No	No	No	No	No	No
C	Yes	No	Yes	No	No	No	No	No
D	Yes	No	Yes	No	No	No	No	No
E	Yes	Yes	Yes	Yes	Yes	No	Yes	No
F	Yes	Yes	Yes	Yes	No	No	No	No
G	Yes	Yes	Yes	Yes	Yes	Yes*	No	No
H	Yes	Yes	Yes	Yes	Yes	Yes*	No	No
S	Yes	Yes	Yes	Yes	Yes	Yes*	No	No
J	Yes	Yes	Yes	Yes	Yes	Yes*	No	No
K	Yes	Yes	Yes	Yes	No	No	No	No
L	Yes	Yes	Yes	Yes	Yes	Yes*	Yes	No
M	Yes	Yes	Yes	Yes	Yes	Yes*	No	No
N	Yes	Yes	Yes	Yes	Yes	Yes*	Yes	No
O	Yes	Yes	Yes	Yes	Yes	No	No	No
P	Yes	Yes	Yes	Yes	No	No	Yes	No
Q	Yes	Yes	Yes	Yes	No	No	Yes	No
R	Yes	Yes	Yes	Yes	No	No	No	No

Note:

Yes*: SMEs with simple websites with simple information about the firm and its products

As illustrated in Table 11.4, most interviewees use e-mail in their businesses, but rarely have websites and buy online. All but three interviewees stated they needed e-mail to communicate with their customers and suppliers. Seven SMEs wanted firm websites, but simple websites with simple information about the firm and its products. Those that bought online before declined to continue the activity. This gives an indication that most interviewees have a good idea what e-commerce all is about. However, many remain disinclined to implement e-commerce, particularly online transactions.

11.2 IMPEDIMENTS TO E-COMMERCE ADOPTION

The interviews revealed some evidence why some SMEs did not adopt or discontinued using e-commerce. The analysis provides a detailed assessment of problems encountered and is divided into a few themes. Table 11.5 displays the barriers to e-commerce adoption according to percentage and ranking.

Table 11.5: Barriers to e-commerce adoption by rank

Barriers	Non-adopters of e-mail (n=4)	%	Rank	Non-adopters of online buying (n=18)	%	Rank	Non-adopters of website (n = 11)	%	Rank
Lack of time	3	75%	1	2	11%	6	7	64%	9
Lack of external infrastructure	2	50%	2	10	56%	1	10	91%	3
<ul style="list-style-type: none"> • Technology infrastructure • Basic infrastructure such as transportation and delivery service 									
Lack of IT expertise and financial resources	N/A			5	28%	4	8	73%	7
Concern about security	N/A			8	44%	2	11	100%	1
Lack of trust of e-commerce	N/A			7	39%	3	11	100%	1
High cost	N/A			5	28%	4	10	91%	3
Customer-related constraints	N/A			N/A			9	82%	5
Inadequate support from government and e-commerce consultants	N/A			N/A			9	82%	5
Unclear benefits of e-commerce	N/A			N/A			8	73%	7
Not relevant	2	50%	2	N/A			6	55%	10

Table 11.5 displays ten barriers to e-commerce adoption among SMEs in this study. There are only three barriers to having e-mail, six to buying online and ten barriers to having a website. A description each of the barriers based on ranking is given below.

11.2.1 Barriers to E-commerce Adoption

11.2.1.1 Concern about security of e-commerce

Concern about security is one of the major barriers why SME managers in this study did not adopt or use e-commerce. Most of the interviewees were uncertain how secure e-commerce was for online transactions. Some SME managers were worried about the possibility of Internet errors in online trading. One SME manager (firm K) had picked up computer viruses that were delivered through the Internet. He had had to reformat most of his computers' hard disks and this was costly and inconvenient.

"When my computer got infected with viruses, I was devastated. Some of my confidential files in the computer were replicated and sent to my friends and customers without my knowledge. I was required to pay a huge amount of money to the computer maintenance firm because my warranty has expired. It cost a lot of my time too, trying to figure out what went wrong. I will not integrate all my computer systems with the Internet any longer."

SME manager from firm K

These SME managers also argued that it was not secure to disclose credit card information on a website, particularly to those that are not well-known and have no track record. According to the managers, Internet hackers may hack information about their credit cards and use it somewhere else. These SME managers still believed that any online trading was high risk. One of the SME managers (firm L) in this study reported his credit card number had been used by someone to buy some expensive items online.

"I was surprised when my credit card provider enquired of me if I had charged my credit card with some large amount of money in Australia. But I told them that I was in Malaysia at that particular time. The transaction was cancelled and I was given a new

credit card. I have never been to Australia, but I bought something online from some other countries. I am now very reluctant to use any online payment after this incident."

SME manager from firm M

"If I were to buy online in future, I would only buy from large and reputable organisations that promise secure protection on online transactions and also those who would pay me back every single cent of what I have spent if something goes wrong with the delivery or if I were to return their products."

SME manager from firm J

11.2.1.2 Trusting e-commerce

Lack of trust in e-commerce is another prominent reason why SME managers were reluctant to adopt e-commerce. SME managers in this study said that e-commerce is not reliable. They claimed that they did not trust e-commerce because they did not trust the Internet. They said the open nature of the Internet as a transaction infrastructure and its global nature created uncertainty around on-line transactions. According to the managers, in the Internet world anybody can be a seller and a buyer because nobody knows who is behind the Internet. They were unable to determine genuine sellers or buyers on the Internet. One of the SME managers (firm P) who had bought online before had now lost trust in e-commerce altogether. This case is described below.

Case 1

The manager from firm P (Mr P) bought a video camera from firm Z's website when he was in the UK for three months' training. He said he needed a video camera to record a few events in the training. Firm Z's website claimed it was a UK-based firm that had been selling photographic equipment and accessories online since 2004. The website had many features including an online payment system and online chatting (customers can chat with the sellers online using the Internet service, 'Skype'¹¹). After a few online communications with firm Z, manager P purchased the video camera for £650. He paid into firm B's account using telegraphic transfer (TT). Firm B promised to send the item within seven working days. However, the item was delayed. The reason given was that the item was out of stock. Manager P eventually received the video camera

¹¹ Skype is a software program that allows users to make telephone calls over the Internet.

after 10 working days, after the events he wished to record had taken place.

Firm Z sent a different item (firm Z stated in the invoice that they gave Mr P an upgrade version of the video camera). The item was sent from Hong Kong. Mr P discovered that the item sent was much cheaper than he had paid firm Z. The only communication he was able to have with the firm was via Skype. Mr P was not allowed to return the item initially. After a few protests, Mr P was then asked to send back the item to Hong Kong. He was required to pay for the return item's postage and insurance (almost £100). The firm from Hong Kong claimed that Mr P had used the video and refused to return Mr P's money. Mr P claimed that he had wasted a lot of his time, effort and money, and was in the process of suing firm B at the time of interviews.

SME managers were also doubtful about having a website with online transaction facilities. If customers were to order and pay online, product and service information, including prices had to be available on the Internet. According to them, this could lead to loss of competitiveness in the marketplace because other firms could imitate them. SME managers said most of the time they relied on the Internet as a means of evaluating and tracking changes in their marketplaces. According to one of the managers, displaying their prices on the websites would allow other firms mimic them. This is worst if large firms mimic SMEs' traditional strengths in serving niche markets, developing customer intimacy and exploiting local knowledge.

"Trust is still an issue and there is a lot of spin and self-interest out there".

SME manager from firm G

"Online payments need control. Control needs trust, ownership and protection. I don't think this technology will last long. And I don't think people will be able to put their trust in the Internet."

SME manager from firm H

11.2.1.3 Lack of external infrastructure

Lack of external infrastructure is another major constraint for SMEs to have websites and buy online, and a second major constraint to use e-mail. Since e-commerce relies on the Internet, a poor telecommunications infrastructure

presents a significant barrier to the application of e-commerce technologies. In Malaysia, while a reliable telephone service and dial-up to the Internet are commonly available, access to a broadband infrastructure remains beyond the reach of potential users in many locations. Because of their location in remote areas, many SMEs suffered from poor telecommunications infrastructure. Sometimes, they need to access the Internet by dial-up connection. Sometimes they waited hours to access a particular website. It was worse still if they wanted to upload and download information to and from the Internet.

“Every time I want to access the Internet, I have to disconnect my telephone service and hook-up at the dial-up service. It takes ages to get connected. This is even worse in the morning and evening. I think this is the time when many people get connected to the Internet. To access e-mail is also a problem. I cannot imagine what it would be like having a website and conducting e-commerce.”

SME manager from firm C

“The government said that we are ready to get connected anytime and the Internet is ubiquitous. I don't think we are up to that standard yet. Not everybody can have a broadband facility.”

SME manager from firm O

SMEs managers also claimed the delivery system for e-commerce in Malaysia was not efficient. Many SME managers said they could not provide prompt delivery to their customers. They still had to use traditional carriers, such as Pos Malaysia Berhad (the Malaysian post office). Although they had alternative ways to send items, such as DHL, they were quite costly. SME managers also said that the traditional carriers did not deliver at the weekend and sometimes the items did not arrive on time. Most of the time, sellers and buyers needed to go to the post office to send and collect the item.

“In order for e-commerce to succeed, everything needs to be efficient – the order and payment systems, the online tracking system as well as the delivery system. If all these things can be fixed, then we may be ready for online transactions.”

SME manager from firm L

11.2.1.4 High cost

Another main reason SME managers were reluctant to have e-commerce in their businesses was the high start-up and maintenance costs, particularly in adopting a website. SME managers said that if they were to have a website with online transactions they had to invest more money to buy more advanced machines, hire more people with ICT skills, and send more staff for training.

“We are SMEs. We are not as rich as large organisations. Our works are on a day-to-day basis. We have got to make sure that our businesses run smoothly in order to survive. How can we compete with large organisations which have a lot of money? With the Internet, the large organisations are the ones who benefit most. Previously, they may have looked for SMEs to sell their products to the local people. However, with the Internet, they can sell directly to the people at a cheaper price without us.”

SME manager from firm J

“There are so many things that I would need to consider if I were to sell my products internationally through e-commerce facilities: laws in countries, customs, security and many other things. All of these need huge investment. It is not as easy as it is made out to be.”

SME manager from firm N

One of the SME managers (firm H) stated that he had been attracted to have a complex website and a full range of e-commerce. He now prefers a very simple website. His case is described below.

Case II

Manager from firm H (H) has been using the Internet for more than five years. H is a heavy user of the Internet. Every morning, he starts his day by reading his e-mails, visiting his firm website to find out whether any customers or potential customers have visited, and browsing the Internet to find information. His firm has had a website for more than 3 years. Previously, his website had online ordering and online payment, facilities that he wanted after attending a conference on e-commerce in one of the hotels in Kuala Lumpur. He was interested in what was shown to him and how easy selling and buying online can be. Because he had an Internet connection and website, the e-commerce provider told him that it would be easy for his firm to have online ordering and online payment on the website. H sent brochures and leaflets to all his customers and potential customers about his new firm website. He promoted his website whenever he went to conferences or seminars. He also gave a discount to customers and potential customers to encourage them to use his website. Yet, after a year, there had been very few online enquiries. Customers preferred to use e-mail or phone directly. He had spent a lot of money, time and effort promoting his firm website for no return.

His provider suggested how to improve the website by offering yet more e-commerce solutions. He was told to keep on promoting the website. But he had no energy or money to focus on the website and finally terminated the agreement with the provider. He now has a simple firm website with online brochures and online catalogue. It is occasionally maintained and updated by one of his staff who he has sent for training.

Some managers claimed that online buying also involved high costs. They needed to do research before buying on the Internet, which was time consuming. According to the managers, although access to the Internet is getting cheaper, many Internet providers still charge for Internet usage by the minute. Since there is a wide range of websites on the Internet, buying online sometimes takes longer than traditional shopping. Managers complained that, when they were on the Internet, they did not realise how much time they were spending.

Although many researchers claim that online buying is cost efficient because customers can buy directly from the seller without intermediaries, this is not always the case, especially when buying overseas. One particular SME manager

in this study (firm N) had to pay much more than he expected. His case is described below.

Case III

N is a managing director of a manufacturing firm in Penang. Manager N bought a huge massaging chair for his firm online from an eBay website. The website stated that the chair could be delivered cheaply anywhere in the world. The website also claimed that, as the firm had a local store in Malaysia, N would not have to pay any tax. N was very happy because he thought that he got a very good bargain after his research on the Internet. The price he paid was almost 30% less than the local price. But when he received the item, he was required to pay tax because the postage stated that the item was from Germany. So, he had to go to the Royal Malaysia Customs, which is in Kuala Lumpur, to pay the excess duty, a trip of 400 km from his base in Penang. He also had to pay to take the chair back to Penang. He then realised that two wheels of the chair were broken.

When he contacted the firm, the firm stated that N could have a replacement if he returned the item, or the firm could send replacement wheels. Since the chair was heavy and the return postage costly, N agreed to the wheels. The chair never did work well. After calculating the cost of the transportation, N admitted that he had paid more than the local price. The one year warranty for the chair was useless because of the expense of returning the chair.

11.2.1.5 Customer-related constraints

Another prominent reason why SME managers were reluctant to have e-commerce in their businesses was that the demand for e-commerce from customers was very limited. SME managers stated that e-commerce needs not only active sellers, but active buyers too. To capture the attention of customers to buy online, SMEs needed an attractive website. This needed proper planning which would take time, effort and money. Even then, this did not guarantee that the SMEs would be able to sell online and make profit.

“Come on...let’s ask all the SMEs what they want. I am sure the bottom line is how to make profit and sustain it. If we have a very sophisticated website, how do we know that there will be buyers? Our society is not ready for online transactions yet.”

SME manager from firm M

"I have had online ordering and online payment on the website for nearly two years. I think I did a lot of advertising to promote the website. Not a single buyer has purchased through my website. I would rather use my energy to promote my business and keep my customers with me."

SME manager from firm R

"To succeed in e-commerce, we must have a lot of buyers that buy from our websites. It is not easy to make buyers buy from us. This is even worse if they do not trust online buying."

SME manager from firm P

11.2.1.6 Inadequate support from government and e-commerce consultants

Many SME managers, particularly those who received government support, are disappointed with the support. Managers said that government and ICT consultants always persuaded them to adopt ICT, particularly e-commerce. According to some of the managers, in the process of getting them to adopt e-commerce, both the government and e-commerce consultants made many promises to SMEs. However, most of the SMEs were ignored once they adopted the technology. SME managers said they suffered with the technology and drifted in their own world without proper direction. Some SMEs in the interviews had abandoned the technology adopted and some had stopped using it. These managers said when this happened; they lost trust in the government or IT consultants.

"The consultants gave us a lot of promises before we used their services to have a website. They came and visited us almost weekly during the trial period to see our progress dealing with the website. After we had signed an agreement with them, we could hardly get in touch with them. We needed to call them several times before they agreed to meet us. They said there were no dedicated consultants for each SME, but one consultant for many SMEs. So, the SMEs in trouble were required to make appointments. It sometimes took weeks and months."

SME manager from firm J

Most interviewees that received the government grant also regarded the government grant as relatively short-term. A manager in firm E illustrated how short-term assistance can hinder the adoption of technology. This firm started developing their website in 2001 with partial funding coming from government and help from an e-commerce community portal provider. However, by early 2002, the website had some problems and the online transaction facilities were not working properly. By the end of 2002, the online transaction facilities were still malfunctioning and government was extremely reluctant to provide funding to a project it perceived as non-viable. The manager had to put more of the SME's money into the project. After a few months, the manager realised that very few customers had ever visited his firm website and the online transaction facilities were not used at all. He terminated the project.

"The government gave us some grant previously and it was only for a year. The grant was a very small amount of money. By the time the website was set-up, it was almost a year. We needed to top-up with our own money to pay the consultants. When we told the officer in-charge our problems, he said to us that the grant was only for a year. The rest of the things we needed to do ourselves – either hire a consultant, or maintain on our own. This was total nonsense."

SME manager from firm E

A number of firms had applied for government grants and assistance, but had not been successful. Some interviewees saw most of the advertised assistance for SMEs as pure political hype. They claimed that only firms with strong political connections were granted assistance. Similarly, some Non-Bumiputra interviewees were convinced that any application for government assistance would be turned down solely on race grounds.

"Don't think the government will help you. They provided assistance so they have it on paper to show to their bosses that things had been implemented. Although they said that they gave financial services to SMEs, the truth was that when we wanted to apply for some money, we needed to mortgage some of our properties."

SME manager from firm S

Despite the misgivings expressed above, a number of firms were intending to apply for government assistance in future. However, most interviewees insisted that the government assistance should be tailored to their requirements. The government and consultants should not make plans for SMEs, without understanding what SMEs want to do.

11.2.1.7 Lack of IT expertise and financial resources

Lack of IT expertise and financial resources are also among the constraints for SMEs to adopt website and buy online. Many managers stated that they lacked IT expertise in the firms and the financial resources to adopt e-commerce. SME managers said they needed a technical expert who could set-up and maintain the websites for them because they were not able to do that on their own. However, they were not willing to hire dedicated IT expertise or an IT consultant since that would cost too much. SME managers claimed that setting-up a website with online payment facilities was not easy. They said that e-commerce is not a simple and straightforward process requiring only the installation of hardware and software. Instead, it was a complex and time-consuming activity. In addition, SME managers were not willing to invest money, time and effort in a technology that had no yet proven track record in the SME sector.

“We are delighted if government or e-commerce consultants can provide us with training to set-up and maintain the website. We don’t need anything fancy; we just want simple and manageable websites. The training package for creating a website is too expensive and too complicated. We don’t have resources for that now.”

SME manager from firm R

Some managers stated they were not familiar with online buying. They said they were many procedures to buy online, such as to fill the online form and also to disclose the credit cards details. They said they did not have an expertise to do so. In addition, they also did not trust to buy online.

11.2.1.8 Unclear benefits of e-commerce

Another major reason why SMEs did not adopt e-commerce was a failure to gain any advantages from using the technology. SME managers said the benefits of

having e-commerce were not clear. Many SME managers in this study who used to have more complex firm websites have scaled down. They hardly sold online and never gained any profit from complex websites. Instead, they needed to invest even more to maintain their websites. One particular manager (firm E) reported that the firm website was a white elephant: it remained on the Internet but was not in use anymore.

“All this while, we heard many good things about e-commerce, such as how SMEs can increase their sales and how to save costs using e-commerce. So, we invested in a complex website for online transactions. But, ... we are only able to look at it, edit it and maybe feel proud of it. That is it. How to make customers buy from it is the biggest problem in e-commerce.”

SME manager from firm E

11.2.1.9 Lack of time

Lack of time to use e-mail, to buy online and also to set-up and maintain website is among the constraints faced by most interviewees. Most SME managers interviewed claimed that they were very busy with their routine business operations. They stated that they were required to do so many things at the same time. They rarely had a normal day, as there was always something urgent to do, an important problem to be sorted out.

Most of the interviewees saw e-commerce in their business as yet another task to be done. They already had a great many things to do, and they were not convinced that adding more would be useful. They argued that acquiring websites was not as simple as it was made out to be. Managers needed time, money and effort to maintain and update their websites, especially websites with online transaction facilities. One particular SME manager (Firm L), who used to have an online transaction facility on his firm website, stated that he felt guilty if he did not update or maintain his firm website. He claimed he had invested a lot of effort and money in a website with online transactions. But he no longer had time to do so now, and particularly to incorporate the website into his business. He and his staff had spent 4 to 5 hours a day every day outside office hours for more than 3 months setting-up the firm website. They promoted their firm website to almost

everyone they knew, but the customers still preferred leaflets from his office or in an e-mail attachment. He finally decided not to invest more time and money in such a complex website. He now had a simple website for his firm. Even so, he hardly had time to maintain it.

“Time is very precious for SMEs like us. We have so many other things to do rather than sitting in front of the computer.”

SME manager from firm L

“Oh yes, I have an Internet connection in my office. I also use e-mail sometimes, but I hardly have time to open it. I usually check my e-mail after office hours. There are only three of us working in the office. The rest of my employees are at the sites. If any of my staff want to use the Internet, they have to come to the Internet room. I don't think that we need more than an Internet connection at the moment.”

SME manager from firm R

“I used to sell through eBay for some time. In eBay, we usually need to check our listed items every day to make sure whether the items are sold or if there is any enquiry regarding them to which we need to reply. If the items are sold, we need to contact the buyers to arrange for invoices. We need to pack the item and send it to the Post Office as soon as possible. We need to be quick if we want to have a good review from our buyers. It was really hectic. I have no time to do that anymore.”

SME manager from firm G

11.2.1.10 Not interested and not relevant

Some of these SME managers stated that they were just not interested in Internet activities. One particular SME manager (firm A) claimed that most of the time he was with his employees supervising their work. Therefore, he did not have time to browse the Internet. Another interviewee (firm B) opposed the Internet because of the failure rate of his peers who had adopted the Internet. Two SMEs (firms C and D) used to have Internet connection, but decided to discontinue the Internet connection to cut their operation costs.

“I only use computers to keep information about my customers and the firm inventory. I have the Internet at home for personal access. But I am not fond of

having an Internet connection in my firm because I don't like to spy on my staff."

SME managers from firm B

Some SME managers also said e-commerce was not relevant in their businesses because they served only local people. They said the nature of their business and the product mix offered needed face-to-face interactions. According to the managers, face-to-face interaction between sellers and buyers would produce trust. SME managers claimed that their customers prefer to see and touch the products rather than watch websites. Customers also needed to communicate with sellers about products and services, and finally to negotiate the price. This, according to the managers, did not come with e-commerce.

"I have been selling medicine for more than a decade. My firm website is only to display the kinds of medicine we have. We are reluctant to sell online because not all medicine is suitable for everybody. We need to talk to our customers first and give proper advice to them."

SME manager from firm Q

Almost all the interviewees who used to have complex websites found these were inappropriate. They were satisfied with a simple website and e-mail. They said e-mail allowed them to contact their customers and suppliers, while their website was another form of advertisement that allowed customers to view their products and services online.

11.3 CONCLUSIONS

This chapter has explored the barriers that SMEs face in adopting e-commerce. Qualitative data gathered in the interviews helped the researcher to get detailed information of the issues being studied. These interviews give some idea why SMEs are not adopting e-commerce. Ignorance of e-commerce was not a problem for SME managers in this study. The main barriers found in this study include security, lack of trust on e-commerce, and poor external infrastructure. Malaysia still lacks basic infrastructure for e-commerce such as telecommunications and delivery systems. The analysis of the interviews also raises questions about the effectiveness of both direct and indirect forms of government support. There is

evidence that government grants are inappropriate because they are generally too small, and because they do not cover costs after introduction. The government shows little interest in whether its e-commerce grants bring additionality or if the grants simply pay firms for what they would have done anyway.

CHAPTER 12

DISCUSSION AND REFLECTION

12.0 INTRODUCTION

Chapters Seven to Eleven presented the findings of all the research questions in this study: the e-commerce usages among SMEs in this study, the internal factors that facilitate e-commerce adoption, the findings from the government support for SMEs to adopt e-commerce, the reasons for and benefits of e-commerce adoption, and finally the inhibitors of e-commerce adoption. This chapter, on the other hand, presents a discussion and reflection based on these findings. It describes the meaning of the findings from the survey and interviews and compares them in the light of previous findings made by other researchers.

The organisation of this chapter is as follows. Each section in turn presents discussion and reflection of the research questions. The chapter ends with a conclusion of the discussion and reflection.

12.1 E-COMMERCE USAGES AMONG SMES

The snapshot of e-commerce usages among SME in this study provides some preliminary insights. The results from the survey showed that many SMEs have an Internet connection installed in their firms. One interesting finding from the survey and interviews was that some SMEs and government officials were uncertain what is included in e-commerce. Some SMEs regard browsing the Internet to search for business information as e-commerce (Karakaya and Khalil, 2003), some include personal e-mail in e-commerce, while others claim only online transactions as e-commerce (Raymond, 2001; Turban *et al.*, 2006). Others studies, too, used different kind of business activities as e-commerce (Kendall *et al.*, 2001; Daniel *et al.*, 2003; Pool *et al.*, 2006; Scupola, 2009). This study, however, regards e-commerce as a set of three components: e-mail, online buying, and online selling (indicated by having a website). These three components have

been used by other prominent e-commerce researchers to study e-commerce (e.g., Daniel *et al.*, 2003; Pool *et al.*, 2006).

E-mail is the most popular form of e-commerce adoption among SMEs in this study. More than 95% of SMEs in this study have used e-mail in their firms. These findings are similar to those in other e-commerce studies (Daniel and Wilson, 2002; Drew, 2003; Brown and Lockett, 2004; Ordanini, 2006; Pool *et al.*, 2006). Indeed, some researchers have claimed that e-mail has been the most prominent form of e-commerce in SMEs almost everywhere (Kalakota and Whinston, 1996; Pool *et al.*, 2006; Chuang *et al.*, 2007). Similar to other studies (e.g., Pritchard, 2002; MacGregor and Vrazalic, 2007), this study also found that e-mail has become a critical tool for communication, distributing documents, and sharing information among businesses. However, the extent of its use is limited by SMEs' recognition of the importance of face-to-face interaction with their customers and suppliers. This was confirmed by more than 15 SME managers during the interviews. Most managers claimed that the level of confidence in using e-mail for communication with both customers and suppliers increases only after initial face-to-face interaction, which is similar to Karakaya and Khalil's (2003) findings. E-mail, therefore, becomes a means of maintaining a business relationship. It was interesting to find out that many respondent managers in this study have started using e-mail to send brochures to their customers/suppliers and also to accept orders from them. According to Daniel and Wilson (2002), e-mail is typically the first step in e-commerce, as it allows a firm to access information and maintains communication with its customers and suppliers. This can then lead to more advanced e-commerce activities.

The survey revealed that the second most widely adopted e-commerce component among SMEs in this study is the setting up of a website (almost 60% of SMEs in this study have websites). But, there is a difference in the way the website is put to use among these SMEs. Many SMEs have a website with online brochureware and online catalogue that display online information about the company, its products and services. However, very few SMEs have engaged in more complex website activities, such as websites with online ordering and online payment (not

even 5% of SMEs in the survey have a website with an online payment system installed). These findings are similar to other SMEs and e-commerce studies (e.g., Daniel and Wilson, 2002; Drew, 2003; Brown and Lockett, 2004; Ordanini, 2006; Pool *et al.*, 2006; Chuang *et al.*, 2007; MacGregor and Vrazalic, 2007) that found SMEs were comfortable with websites that display information about their firms, products and services; but rarely transacted online. One interesting finding from the survey is that SMEs were not only reluctant to have a website with online payment system installed, but were also hesitant to put prices of their products and services on websites. Only 12% SMEs in this study display the prices of their products and services on their websites. SME managers claimed that they were concerned that other firms might imitate their online prices or undercut them. The interviews confirmed this finding. Scupola (2003) also claimed many managers in her study were reluctant to display price of their products and services because they were fearful that their competitors, particularly large firms, might emulate them.

Among the three components of e-commerce, online buying is the activity least used by SME managers. A possible reason may be that the SMEs in this study were rarely part of large firms. Thus, they were not required to buy from their parent firm websites. The interviews revealed that SME managers preferred to access websites that are easy to operate, not only to complete the online buying process, but also to check the prices of other firms' products and services. Many times, SME managers research the product online, but end up buying it from offline traders. Other studies also found a similar finding. For example, a study by *Forrester*, a research consultancy, found that many consumers in Europe bought products offline after having first investigated prices and details online (*Economist*, 2004).

In general, e-commerce usages among SMEs in Malaysia are still in their infancy stage. Analysis from the survey shows that the rate of e-commerce diffusion did not seem particularly important among SME managers in this study. Only 25% of SMEs have integrated all the three e-commerce components and only 38% of SMEs used two e-commerce components. Most of the time, e-mail is the only e-

commerce component used by these SMEs. E-commerce is often considered as a stand-alone resource among SMEs, which is in line with Ordanini's (2006) findings. Thus, we may speculate that SMEs in this study are yet to exploit all the potential of e-commerce in their businesses.

12.1 THE INTERNAL FACTORS THAT FACILITATE SMES TO ADOPT E-COMMERCE

12.1.1 SME Manager Demographic Characteristics

Five manager demographic characteristics were examined in this study, namely the manager's education, the manager's experience living overseas, ethnicity, gender, and age. Three of these characteristics showed a pattern of association with e-commerce adoption i.e., *the manager's education, the manager's experience living abroad, and the manager's age*. Other manager characteristics did not show any association with e-commerce adoption among SMEs in this study.

The significance of the manager's education and experience should not be surprising when the findings of previous studies in IT adoption are considered. As far as the managerial demographic characteristics are concerned, most literature reviews support the notion that an SME manager, with higher education qualifications, has a tendency to adopt IT (Nickell and Seado, 1986, Variyam and Khalil, 1994; Huy and Filiatrault, 2006; Karami *et al.*, 2006). However, some studies found that manager's education level had no impact on the use of e-commerce, due to the ubiquitous nature of the Internet (Chuang *et al.*, 2007, MacGregor and Vrazalic, 2007) - this study found otherwise. Similar to Variyam and Khalil (1994) and Karami *et al.* (2006), this study found that SME managers' education seems to have an association with e-commerce adoption. The survey revealed that most of the managers who had adopted e-commerce were well qualified, with more than half of them having at least a Bachelor's degree. Indeed, the survey also showed that managers with a Bachelor's degree adopted more complex e-commerce, such as online buying and websites with online payment. Rodriguez (2005) also confirmed this result in his study, about e-business adoption among SMEs. He concluded that education instils an ability to learn and

may encourage a positive attitude to life-long learning in SME managers (Rodriguez, 2005). With education, not only can managers isolate information about things or events, they can also make connections, and transform this information into useful knowledge. Similar to Rodriguez (2005), Karami *et al.* (2006), also claimed that managers with more education can generate a wider range of creative solutions when faced with technology or a complex problem.

In Malaysia, the traditional formal education path for many SME managers has always led to engineering or science degrees (Mohd Osman, 2001). People with these degrees used to be called the 'cream of the crop', and role models for the next generation to follow. A relatively surprising outcome in the survey was that almost half of the managers in this study had Business Study or MBA qualifications, which conflicts with the traditional path of formal education in Malaysia. It is probable that due to globalisation and the demand for professional managers, managers are now more aware of the value of qualifications. Although the survey's responses show that having an MBA has no impact on e-commerce adoption, SME managers still need skills, such as a flexible and adaptable approach to learning, critical thinking and evaluation, the ability to make decisions, and to work to deadlines. These skills may be obtained from Business Studies and an MBA. These views were confirmed during the interviews with SME managers. Business Studies and MBA qualifications should certainly be encouraged among SME managers.

Studies showed that besides managerial qualifications, the experience of managers also influences ICT adoption among SMEs (Manueli *et al.*, 2007; Windrum and de Berranger, 2002). Gray (2006) stated that the experience of SME managers is important, because it is linked with the resources and capabilities of SMEs, which will influence SME managers to adopt innovation. Nevertheless, according to Rodriguez (2005), not only is SME managers' experience important, but the experience of SME managers that have lived overseas for more than six months is also an important factor in effective innovation. Rodriguez (2005) found that the SMEs in his study were more internationalised and adopted e-business more readily than those without such experiences. Like Rodriguez

(2005), this study found that many managers who had experienced living overseas, particularly in developed countries, such as the UK and the US, tended to adopt e-commerce more readily than those who had not lived overseas. Indeed, the survey and the interviews revealed that these managers also adopted more complex e-commerce, such as online buying and websites with online payment. This is one of the important attributes found in this study. Living abroad increased the managers' awareness of e-commerce and exposed them to new ways of thinking. Appropriate e-commerce systems, such as PayPal and eBay, which are popular in the UK and the US, gave the SME managers opportunities to experience buying and selling online. These experiences will open up the managers' thinking before they are ready to adopt e-commerce in their own country.

The survey indicated that there is not much difference in the adoption of all three e-commerce components among the age groups of SME managers. Older managers seemed to adopt e-commerce components as much as the younger managers. However, further analysis of websites showed that SME managers who were older than 40 years old, particularly those from the group aged 41 to 50, dominated the majority of website activities, which contradicted several other studies (e.g., Ramayah *et al.*, 2003; Karami *et al.*, 2006). This group of managers tended to adopt more complex website activities, which may be attributed to the experience that this particular group of SME managers have. Rodriguez (2005) argued that working in today's flatter organisations is said to demand resilience and wisdom – characteristics that are more often associated with experienced and older managers. They were the ones who made the most of their employees, fostered continuous and effective performance, and made the decision to adopt innovation (Westhead *et al.*, 2001). These views were also supported by MacGregor and Vrazalic (2007). Older SME managers tended to have greater management know-how, more resources and information sources, and more social networks than the younger managers (Westhead *et al.*, 2001; MacGregor and Vrazalic, 2007). These skills were required in order to make decisions for the company; particularly in the adoption of a new technology, such as e-commerce (Rodriguez, 2005).

The lack of evidence regarding the association between gender and ethnicity and e-commerce adoption, suggests a wide penetration of e-commerce activities across SMEs. Some studies found that gender impacted the use of the Internet (Sexton *et al.*, 2002) and types of applications (Igbaria *et al.*, 1998). Meanwhile, several other recent studies found otherwise (e.g., Chuang *et al.*, 2007; MacGregor and Vrazalic, 2007). However, this study produced slightly mixed findings concerning gender of SME managers and e-commerce adoption. The survey revealed that gender did not have an association with the adoption of two of the e-commerce components, namely e-mail and websites. However, there was a minor gender-based variation in online buying. The difference between these two findings may be attributed to the difference in the roles of SME managers. The decision to use e-mail or have a website is mainly made by the SME managers, and usually involves an installation cost. The need to invest in these two components may be attributed to other factors, such as necessities or external pressures from customers or suppliers. Sonfield *et al.* (2001), and Chuang *et al.* (2007), found that SMEs in their studies adopted e-commerce because of external and competitive pressures.

However, with regards to online buying, there was no pressure for SME managers to buy online and there was no investment needed to use that technology. The respondents had options to determine whether to buy online or offline. The slight variation in online buying, found in the survey, may have been attributed to by the gender effect (male SME managers bought online 4% more than female SME managers). The survey showed that female managers were more reluctant to buy online than male managers. Similarly, Kolsaker and Payne (2002) also detected minor gender-based variations in online shopping, where men were slightly less concerned about online purchasing than women. Nevertheless, Van Slyke *et al.*, (2002) argued that female managers bought online less often than male managers, because women preferred offline shopping in the mall.

While previous studies showed that ethnicity may play a role in the use of IT applications (Flamm and Chaudhuri, 2007; Middleton and Byus, 2011), this study found that there was no pattern of association between ethnicity and e-commerce

adoption. The difference between the findings of previous research and that of the present research may be attributed to the difference in the roles of respondents in previous studies and the present research. In previous studies, the minority group was found to be the one lacking IT adoption. While in this study, the minority group, which is usually the Chinese (as Non-Bumiputras), adopted e-commerce as much as the majority group i.e., the Malays (as the Bumiputras). There was no difference in terms of e-commerce adoption among these two ethnicities.

It is also interesting to discover from the survey that some Bumiputra status firms were owned by Chinese and some Non-Bumiputra firms were owned by Malays. This indicates that both ethnic groups may have started working together. It is even more interesting to discover that most government assistance, particularly e-commerce grants, was given to the Chinese. This was confirmed in the survey (more than 60% of Chinese managers received e-commerce grants compared to only 25% Malay managers) and the interviews. Thus, the notion from previous studies (e.g., Wong, 2003) that the Malaysian government gave assistance solely based on ethnic background, seemed to be flawed in this study.

12.2.2 SME Demographic Characteristics

Five SME characteristics were also examined in this study: firm size, firm age, economic sector, location of the firm, and IT resources. Most of these characteristics show some association with e-commerce adoption, showing the importance of the SME demographic characteristics in e-commerce adoption.

As expected, the economic sector to which SMEs belong was found to have a pattern of association with e-commerce adoption in this study - SMEs in the service sector adopted e-commerce readily more than SMEs in the manufacturing sector. The survey revealed that SMEs in the service sectors adopted website and bought online more readily than SMEs in the manufacturing sectors. This result is consistent with other findings disclosing a significant difference between service and manufacturing sectors (e.g., Jentzsch and Miniotas, 1999; Goode and Stevens, 2000; Daniel and Grimshaw, 2002; Drew, 2003). Indeed, SMEs in the service

sector also used more complex website activities than SME in the manufacturing sector.

SME managers in the manufacturing sector may not see the applicability of e-commerce to its business functions as widely as those in the service sector do. This might be explained by the nature of their businesses. Phau and Sui (2000) found that SMEs in the manufacturing sector were still not ready to adopt e-commerce, particularly a website, due to the fact that a website only allows customers to view and hear about the firm's products information. It does not allow other senses, such as the feel, smell, and taste of the products (Phau and Sui, 2000). This view is also supported by Boyd *et al.* (2007) that claimed that many SMEs in manufacturing sector need to have a face-to-face interaction with their customers. Like these findings, this study found that many manufacturers were not enamoured with e-commerce, particularly websites, because they needed to discuss and negotiate face-to-face with the actual or potential customers the details of products and services. This was revealed during the interviews with the managers. The service sector, on the other hand, particularly those involved in tourism and hospitality, such as hotels and logistics, may need a website with online payment system installed. This would allow their customers and potential customers to book, buy and finally pay online for the products and services (Heung, 2003).

One interesting finding that was revealed during the interviews was that SME managers in both service and manufacturing sectors have the same view about having a complex website. SMEs in both sectors needed to see the benefits of e-commerce first before they engaged in the real complexities of e-commerce. Managers in both sectors were still sceptical about e-commerce because they were unclear about its benefits.

Previous studies argued that the location of an SME has some pattern of association with e-commerce adoption (Hadjimanolis, 1999; Haig, 2002). Haig (2002), for example, argued that SMEs in urban areas tended to have adopted more e-commerce than SMEs that were located in rural areas. Similarly,

Hadjimanolis (1999) also found that most SMEs in the remote area were hardly connected to the Internet because they had limited technology infrastructure. This study also found that the locational differences of an SME in Malaysia were very important for e-commerce adoption. The survey revealed SMEs in remote areas seem to adopt e-commerce less than SMEs in urban areas. This is probably because the remote areas were less developed and have less infrastructure. Similar to the findings of Mohd Osman (2001), SMEs in this study needed a location with appropriate infrastructure, particularly with high broadband penetration, uninterrupted power supplies, skilled and professional workers, and good transportation systems. This was confirmed during the interviews with the SME managers. This is one of the most important findings of this thesis. SMEs, particularly in the developing countries such as Malaysia, need not only appropriate infrastructure, but also proper public transportations with an efficient postal system to adopt e-commerce.

Studies show that firm age is related to ICT adoption behaviour (e.g., Karshenas and Stoneman, 1995; Hollenstein, 2004). This study also found that firm age showed some influences on e-commerce adoption among SMEs. Younger SMEs tended to adopt websites and bought online more than older SMEs. Indeed, the younger SMEs seemed to have websites with more complex facilities, such as online ordering and online payment. MacGregor and Vrazalic (2007) also found that younger SMEs adopted more complex e-commerce activities compared with the older ones. This might be attributable, in part, to the basic ICT infrastructure available to younger SMEs when they set up in business. They can choose applications tailored to their needs. So, many SME managers from younger firms may have installed the latest ICT. Conversely, complex ICT technologies were uncommon when older firms were established. Many of these older firms may have sunk ICT capital and have entrenched ICT systems. They are perhaps more 'traditional' in their approach, preferring to remain within their commitments (MacGregor and Vrazalic, 2007). So, for them to change from their current practices will take a considerable effort.

The significance of the firm size should not be surprising when the findings of previous studies in the IT adoption are considered. Similar to previous studies (e.g., Ordanini, 2006; Premkumar and Roberts, 1999; Thong and Yap, 1995), this study found that firm size showed some influences on e-commerce adoption among SMEs, particularly on website activities. The survey revealed that larger SMEs engaged with more complex website activities than smaller SMEs. This may be because larger SMEs have more complex organisational structures than smaller firms and, hence, have internal requirements for extensive ICT (Premkumar and Roberts, 1999). They also have the financial resources to adopt latest technologies (Premkumar and Roberts, 1999). One interesting finding of this study is that buying online seemed to favour smaller SMEs. Only eight per cent of larger SMEs compared with thirty-two per cent of smaller SMEs bought online. This may be because smaller SMEs were more flexible, have less bureaucracy and be able to make more rapid decisions in purchasing decisions. This view is supported by Rodriguez (2005), who found a similar finding in his study.

Consistent with previous studies (e.g., Goode and Stevens, 2000; Ismail, 2007), this study also found that firms which spend more on IT adopt more complex e-commerce activities than other firms. This finding was also confirmed by Martin and Kambill (1999) who claimed that more investment for technology and knowledge allowed new e-commerce technology to be more assimilated and exploited. Another outcome found in the questionnaire responses was that SMEs without IT specialists had websites and bought online more than those with IT specialists. However, when it comes to having complex websites, SMEs need an IT specialist. This finding is consistent with other studies that claimed that one factor that inhibited SMEs from adopting e-commerce was the absence of IT specialist staff in the firms (Jones *et al.*, 2003; MacGregor and Vrazalic, 2007). Despite this claim, one interesting finding from the interviews was that SMEs which adopt e-commerce asserted that they do not need IT specialists to adopt e-commerce; whereas SMEs which do not adopt e-commerce claimed an absence of IT specialists is one of the biggest impediments. Hence, there were mixed view in terms of having IT specialist in the firm. It may be that those SMEs that adopt e-

commerce have IT savvy staff or they only adopt simple websites, whereas those which do not adopt e-commerce may simply give the absence of IT specialist as a reason for not adopting e-commerce.

Taking the results of the present study and others on organisational demographic characteristics, an implication can be drawn. Although some studies, particularly those from the western countries, found that the effect of organisational demographics on e-commerce adoption characteristics is very little and in some cases not at all (Chuang *et al.*, 2007), this study found otherwise. The effect of the managerial and particularly the firm's demographic characteristics on the extent of e-commerce adoption in SMEs in this study is remarkable. Eight out of ten demographic characteristics show some interesting association. Hence, it can be said that when e-commerce is applied to a specific area such as SMEs in developing countries, effects of these two demographic characteristics seem greater compared with other studies.

12.3 GOVERNMENT SUPPORT FOR SMES TO ADOPT E-COMMERCE

Another crucial concern of this thesis is how e-commerce adoption among SMEs in this study might be influenced by the external factor, namely government support for SMEs to adopt e-commerce. The survey revealed not even 20% SMEs (only 103 SMEs) in this study received government ICT assistance. Of these, 69 SMEs received the e-commerce grant. The survey revealed most of these SMEs used e-mail in their businesses (97%), but only four-fifths of the 69 SMEs have websites (55 SMEs) and 34 SMEs bought online. Hence, 14 SMEs have no websites. This result is surprising because they have received an e-commerce grant. One interesting finding from the interview was that four of the SME managers that received e-commerce grant have forgotten that they had one. And some were not sure that whether they still had websites. These could be the reasons why some SMEs that had received e-commerce grant claimed that they have no websites.

The analysis of the survey revealed that most SMEs used e-mail, bought online, and had websites with online brochureware and online catalogues which provide

contact details for the firm and information about the firm's goods and services regardless of whether they received or did not receive an e-commerce grant. Indeed, the survey also showed that SMEs with an e-commerce grant had more websites compare to SMEs without the grant. This may imply that one the purpose of the e-commerce grant, namely to encourage SMEs to have websites has been accomplished (SMIDEC, 2001). However, when it comes to having more complex websites, the survey revealed that SMEs without the e-commerce grant had slightly more complex website activities than SMEs with the grant. This may indicate that SMEs were able to have more complex websites without any financial assistance from the government. The interviews confirmed this statement. SME managers stated that what matters to them was not the cost of having websites, but what benefits they gained from having them.

The interviews revealed that there was a conflict of interest between policymakers and SME managers. The policymakers in this study were very enthusiastic about e-commerce. They believed that e-commerce will benefit businesses, particularly SMEs. Thus, many e-commerce programmes have been designed for SMEs to adopt e-commerce based on the government's view. For policymakers, if only 10% of SMEs used the government grant successfully, they would be contented. This was confirmed by one of the government agency directors during the interview. SMEs, on the other hand, found that government e-commerce funding was neither appropriate nor adequate. There was a high level of awareness of initiatives offered by the Malaysian government, yet the number of SMEs utilising this support was low. This can be seen in the survey where not many SMEs applied for government ICT grant. Government officials put the blame on SMEs for not seizing the opportunities offered. SMEs, on the other hand, claimed that most government programmes were tailored to the government's needs, not SMEs' needs.

It was also interesting to find out that a number of the firms interviewed had applied for government assistance, but had not been successful. The SME managers claimed that most of the advertised assistance was purely political hype, or that help was channelled to firms with strong political connections. This is

another important finding in this study. This finding is supported by Mohd Osman (2001) and Adhikari *et al.* (2006) studies. Adhikari *et al.* (2006) reported that in developing countries, such as Malaysia, the relationship with government was much more important than market-based transactions.

Likewise, a number of Non-Bumiputra interviewees were convinced that applications for government assistance were decided solely on grounds of race. The evidence in support of this claim is very subjective because the survey shows that more than half of the e-commerce grants were given to Non-Bumiputras (44 of the 69 SMEs that received e-commerce grant were Non-Bumiputra). This finding contradicts Mohd Osman (2001) findings that claimed that most government assistance was merely for Bumiputras. It could be argued either that Bumiputras are reluctant to apply for grants, or that Non-Bumiputras are taking more opportunities to network with the government. Or perhaps the government has opened its programmes to Non-Bumiputras in its eagerness to help SMEs.

It is hard to be positive and constructive about the e-commerce grant, and particularly about its encouragement for SMEs to adopt e-commerce. Only 69 SMEs in this study claim that they had ever received the grant and their view of the funding varied widely. Some SMEs claimed that the e-commerce grant has been designed to encourage them to use e-commerce, while some others declared the grant was detrimental to the SMEs' development. The researcher did attempt to establish the level of SMEs' concern in the allocation of government funds in general. Interviewed firms were asked whether official funding had been the deciding factor in their investment plan to adopt ICTs, particularly e-commerce. A number of them categorised government grants as 'important', but all recipients would have adopted e-commerce, irrespective of the availability of official assistance. In general, the findings from the survey and interviews showed that SMEs with government grants to adopt e-commerce were no more likely to adopt it than other SMEs. The e-commerce grant brought very little additionality to SMEs, only for SMEs to have website with online brochureware. Although e-commerce grant showed very little benefit to SMEs, some SMEs still needed government support. The interviews revealed that more than one half of the

number of SME managers said that they needed the government grant regardless of whether it benefited them or not.

Another concern that was raised during the interviews was the assessment of the government assistance. Many SMEs are particularly critical of government 'one shot assistance'. Many managers stated that the government did not follow up with firms that have received the government grants. There was rarely any evaluation of government programmes. E-commerce grant was just a typical example of a government grant that had not been evaluated. This was confirmed by one of the government agency directors during the interview. Although e-commerce grant was not been evaluated, the director believed that any government programmes for SMEs should be evaluated for SMEs to benefit from them. This view was supported by Briceno and Gaader (2009) who argued that government programmes should be evaluated to determine the appropriateness of the programmes. Indeed, according to Gray and Zappala (2006), government should design programmes appropriate to the SMEs they were meant to help by try to understand SMEs and to talk business in their own terms.

12.4 REASONS FOR AND BENEFITS OF E-COMMERCE ADOPTION

Reasons for and benefits of e-commerce adoption were also investigated in this study. It was found that most managers in this study were contented with e-mail, which is similar with other findings (e.g., MacGregor and Vrazalic, 2007; Ordanini, 2006; Scupola, 2003; Daniel *et al.*, 2003). Twenty-four SME managers that used e-mail confirmed that the reasons they used e-mail was to contact and send messages to their employees, customers, and suppliers. This was confirmed during the interviews with them. They felt e-mail was efficient because they can send messages earlier to their employees, customers, and suppliers without the need to call them. In addition, e-mail allowed SMEs to send messages to large groups of people more efficiently.

Managers, who bought online, on the other hand, stated that the reason they bought online was to buy items which were not available locally and to get better prices. In addition, the experience buying online before when they were abroad

encourages them to emulate the behaviour. Managers stated that buying online was convenience experience. This is because they can buy online at their own time and place. In addition, online buying also enabled the managers to scout for cheaper prices on the Internet.

Reasons for and benefits of having websites were different from the two e-commerce components. Based on the findings, a table of ranking analysis was developed. Table 12.1 shows SME reasons for and benefits of having website based on ranking.

Table 12.1: Reasons for and benefits of having websites by ranking

Reasons for adoption	Ranking	Benefits from adoption	Ranking
Enhance company image	1	Market expansion	1
Attract new business	2	More customers	2
Essential part of business	3	Increased sales	3
Stay ahead competitors	4	Enhanced status	4
To impress customers	5	Increase productivity	5
Follow the trend	6	Task accomplished more quickly	6
Website is nice to have	7	Reduce operating costs	7
Lower cost	8		
Compete with other websites	9		
Qualify for government subsidies	10		
Pressure from customers	11		
Pressure from suppliers	12		
Pressure from government	13		

It was found that most important reason why SME managers adopt websites was to enhance company image, and the least important was pressure from government. This indicated that many SMEs adopt websites mainly to improve the image of the company, rather than for business efficiency and external pressure. Having a website helps SMEs to enhance the firm's image and attract new business. In addition, a website is essential to help a firm stay ahead of competitors, and impress customers. In order to stay ahead of competitors, managers stated that they need to follow the marketing trend, which is to have a website. This was confirmed by SME managers during the interviews. Many other studies have found that SMEs adopt websites because they do not want to be

left out (e.g., Rosenbloom, 2002; Ordanini, 2006). They need a website to establish credibility in the eyes of actual and potential customers, which may lead to more businesses (Rodriguez, 2005).

It should be noted that while the study by Tan and Teo (1998) found that cost was cited by non-adopters as a reason for not using the Internet, research by Mirchandani and Motwani (2001) showed that the operational cost of e-commerce was irrelevant. The finding was supported by another study (Scupola, 2003). This study also found that lower operation costs was among the least important reasons why SMEs adopt websites (only 19% respondents claimed that the reason they used websites was to lower operation costs). On the other hand, SMEs that did not adopt e-commerce claimed that high cost inhibited them from doing so. This implies that while low operation costs might not motivate businesses to adopt e-commerce, 'perceived' high cost might inhibit businesses from embracing e-commerce. Reasons, such as pressure from customers, suppliers and governments, which other studies found to be important in the decision of SME managers to adopt websites (Raymond, 2001; Chan and Al-Hawamdeh, 2002; Daniel and Wilson, 2002; Drew, 2003; Looi, 2003), were just not so important in this study. Part of the reasons may be because SMEs in this study were rarely suppliers to large firms.

The questionnaire responses also indicated that the tangible benefits SMEs gained from having a website include market expansion, more customers, increased sales, increased productivity, and reduced operating costs, which were similar to the claims of Raymond (2001) and Quayle (2002). Yet, the interviews did not substantiate such claims. Many managers who claimed that they gained tangible benefits from having a website were uncertain whether they had achieved them. This is in line with Gray's (2006) study that claimed most e-commerce tangible benefits are usually assumed rather than proven. The interviews also disclosed the fact that many managers were still sceptical about websites, particularly websites with online ordering and online payment. They were unsure what websites could offer them. If they did not have a website, they were considered out-dated. However, if they adopted a complex website, it would cost them a fortune. Gray

(2006), too, found that many SMEs doubted whether adopting e-commerce, particularly websites, improved the way they do business.

It should be noted that while the study by Raymond (2001) and Quayle (2002) claimed that SMEs gained tangible benefits from e-commerce, research by MacGregor and Vrazalic (2007) on SMEs from three countries, namely the US, Australia, and Sweden, showed that it was intangible benefits that SMEs gained most. As with MacGregor and Vrazalic (2007), this study also found that the intangible benefits that SMEs gained most. Managers during the interviews stated that their firm's status was enhanced by having a website. Managers were pleased to have a business card with a firm website address on it to represent their firm. This showed that their firms were IT literate and following the trend, as was also found by Rosenbloom (2002). Once a firm has a website, customers from other countries can browse their websites and make contact. According to Rodriguez (2005), this is a first step to going international. By having a website, SMEs were able to respond to customers and markets more quickly and efficiently (Lancioni *et al.*, 2000), while enjoying lower logistical, postal, and personnel costs (Kalakota and Whinston, 1997).

Consistent with other studies (e.g., Gray, 2006; MacGregor and Vrazalic, 2007), SME managers in this study were still struggling to reap the tangible benefits from websites. They were willing to invest in complex websites only if they were convinced these websites were really needed. When considering the decision whether to implement e-commerce, SMEs managers in this study were more concerned with the value added, rather than the cost of the implementation or operation. This finding was similar to Gray (2006). This view was also supported by Poon and Swatman (1998) who claimed that SME managers will invest if the technology brings them profit and benefits almost immediately.

It should be noted that one common factor found in this study on the reasons for and benefit of e-commerce adoption by SMEs is to enhance firm status. This would indicate that to 'enhance firms status' is the key factor in encouraging SMEs to adopt e-commerce, particularly websites. Overall, this study found that it

was the intangible benefits that SMEs in this study placed as being most relevant in deciding to adopt e-commerce. This is in line with earlier findings, such as Scupola (2003) and MacGregor and Vrazalic (2007). Hence, if government wants to plan relevant programme and initiatives that are aimed at encouraging e-commerce adoption by SMEs, the value of intangible benefits of e-commerce should be included in the programmes. MacGregor and Vrazalic (2007; p.177) asserted that if achievable benefits are a “selling point” to encourage SMEs to use e-commerce, then it is important to recognise what these benefits are because failure to do so will result in broken promises in terms of what e-commerce can deliver to the SME sector.

12.5 INHIBITORS OF E-COMMERCE ADOPTION

This study found ten inhibitors to e-commerce adoption by SMEs. Most of these barriers were also found in other e-commerce studies; however, some of them showed different concerns, which will be elaborated upon further in this section. Among the inhibitors that were listed in the bottom five of this study, are: e-commerce was not relevant to the business, lack of time, lack of IT expertise, unclear benefits of e-commerce, and customer related constraints. Whereas the five top inhibitors concerned security, lack of trust in e-commerce, lack of IT infrastructure, high start-up and maintenance costs, and inadequate support from government and e-commerce consultants.

E-commerce not being relevant in businesses was found to be the least important barrier to e-commerce adoption among SMEs in this study. Kendall *et al.*, (2001) and Pool *et al.*, (2006) also found that e-commerce was not suitable for some businesses. This was partially due to the nature of some SMEs and the product mix sometimes needed face-to-face interactions and negotiation. This was confirmed in the interviews. This finding was supported by Gray (2006), who also argues that SMEs sometimes need face-to-face interactions with their customers to produce trust. According to Phau and Sui (2000), customers not only want to see the products, but they also need to touch and communicate with the sellers about the products and services, and to finally, negotiate the price. These

interaction needs may be satisfied without the adoption of e-commerce (Phau and Sui, 2000; Hughes *et al.*, 2003; Brown and Lockett, 2004; Gray, 2006).

However, Chappell and Feindt (1999) and Sadowski *et al.* (2002) found in their study that a lack of time to set-up and maintain e-commerce and a lack of IT expertise were among the major constraints for SMEs to use e-mail and adopt websites. These barriers were also found in this study. However, some studies have argued that these should not be major problems for SMEs. For example, Mohd Osman (2001) suggested that to counter a lack of time and a lack of IT expertise, one common solution is to hire specialist staff to develop and maintain the e-commerce components; particularly the websites. Such staff can then be sent for training and workshops to upgrade their knowledge. Nevertheless, Lawson *et al.*, (2003) and Pool *et al.*, (2006) argued that sending staff for training and workshops will involve costs, which according to them, many SMEs were hesitant to incur. Other studies also found that prohibitive costs acted as a strong disincentive to many SME managers (Baldwin and Lin, 2002; MacGregor and Vrazalic, 2007).

Nevertheless, some SMEs in this study were willing to incur these costs, if they could gain benefits from e-commerce. This was confirmed during the interviews. However, the benefits of e-commerce, particularly websites with online payments, were still unclear among the SME managers in this study. Some of the managers stated that they could not see the immediate effects that e-commerce could offer to their firms. Indeed, some SMEs in this study, that had more complex websites, were scaled down because they could not gain any benefits. Other researchers e.g., Lawrence (1997) and McGowan and Madey (1998), also argued that many managers in their studies claimed that they needed to see an immediate Returns of Investment (ROI), and yet e-commerce is a long-term investment.

Another reason why SME managers in this study were reluctant to have e-commerce in their businesses was that the demand for e-commerce from customers was very limited. SME managers claimed that many people in the country were not ready to buy online. There were very few people who ever

traded online. This view was supported by a study by Nielsen Media Index Malaysia (2008), which reported that the percentage of people, who bought products and services online, was only 9.5%. Hadjimanolis (1999) also asserted that SMEs in his study were reluctant to use e-commerce, because the marketplace for e-commerce was still limited.

A few important concerns were found in this study with regards to the top five barriers that SMEs faced to adopt e-commerce. In common with other e-commerce studies (e.g., Gray, 2006; Pool *et al.*, 2006; MacGregor and Vrazalic, 2007), this study found that security issues and a lack trust of e-commerce, were still major problems for firms adopting e-commerce. While security was commonly used as the 'catch-all' term for the many reasons why firms did not engage in more complex e-commerce, there were also other related reasons that fell into this security category, such as fraudulence, privacy, and viruses (O'Keeffe *et al.*, 1998; Hadjimanolis, 1999; Walczuch *et al.*, 2000; Lawson *et al.*, 2003; MacGregor and Vrazalic, 2007). During an interview, one of the SME managers admitted that he was the victim of fraudulence. Someone had invaded his privacy by using his credit card to purchase something online. Computer viruses spreading through the Internet were also another issue. Firms need to protect themselves against both fraud and viruses; and more investment is needed to make this happen. Though many governments have tried to overcome these security issues, many SME managers still believe that a website with online transactions is a high risk (Pool *et al.*, 2006). This was confirmed by several SME managers during interviews. Indeed, the latest Department for Business, Enterprise and Regulatory Reform in the UK, reported that 45% of SMEs had a security problem in 2007 (BERR, 2008).

In addition to security, a lack of trust of e-commerce was also identified in this study as another main barrier for SMEs in adopting e-commerce. As the Internet is an open source of technology (Paul, 2003), many SMEs are uncertain whether their businesses would be affected by this medium. If SMEs were to have websites with online transactions, they would need to disclose their products and services information, including prices. This could lead to a loss of

competitiveness in the marketplace, because other firms could imitate them. Pease and Rowe (2003) and Scupola (2003) found similar findings. Haynes *et al.*, (1998) also argued that many businesses now relied on the Internet as a means of evaluating and tracking changes in their marketplace. This would open up threats to SMEs, since other firms (particularly large firms) would be able to mimic the traditional strengths of SMEs in serving niche markets, developing customer intimacy, and exploiting local knowledge (Soh *et al.*, 1997). Similarly, SMEs in this study were also afraid that other firms would imitate them; particularly their products and prices. Therefore, many SMEs were satisfied to have a website with information only about their firms, products, and services.

Another major barrier for SMEs in this study to adopt e-commerce is lack of external infrastructure. The external infrastructure issues are very important because they are away from the SME managers' control. The lack of external infrastructure found in this study can be divided into two: i) lack of technology/telecommunication infrastructure, and ii) lack of basic infrastructure. Lack of technology infrastructure has been discussed in many studies and this has also been one of the major concerns in many countries (Slyke and Belanger, 2003; Heung, 2003; MacGregor and Vrazalic, 2007).

Since e-commerce relies on telecommunication networks, a poor telecommunications infrastructure presents a significant barrier to the application of e-commerce technologies (Slyke and Belanger, 2003). In Malaysia, while a reliable telephone service and dial-up to the Internet are commonly available, access to a broadband infrastructure remains beyond the reach of potential users in many locations. Like most governments, the Malaysian government, has put a lot of effort in providing adequate telecommunications, an appropriate legal environment and secure banking, and efficient Internet operations (Collechia, 1999). Nevertheless, the country is still suffering from deficiencies in telecommunications. There is still limited access to broadband, particularly in the remote areas. Some SME managers were disappointed with access speed to the Internet, although they had broadband installed. This was confirmed during the interviews. Policymakers in the country regularly promise improvement on

technology infrastructure (Malaysian, 2008). Indeed, this was a claim made by government officials during the interviews. Despite such assurances, Internet speed is still a major problem in Malaysia, as is the case in many developing countries and some developed ones.

In addition to the technology infrastructure, another main concern that was raised during the interviews is lack of basic infrastructures. Malaysia suffers not only in terms of technology infrastructures, but also from basic infrastructure, such as poor public transportation and deficient postal services. This is one of the most important factors found in this study, which is seldom found in other studies. SME managers complained that the delivery time for letters or parcels was always unpredictable, and public transportation was not efficient enough. Although, the Malaysian government has promised to enhance public transportation systems for so long, this issue is still unsolved. The Ninth Malaysian Plan (9MP), for example, has allocated RM1.6 billion to enhance public transportation in the country (Malaysia, 2007b). However, the country still suffered from poor transportation systems because access to public transport was not well planned. Buses, trains, and taxis were rarely link to each other and schedules for buses and train were also not reliable. Thus, many people continue to use their cars or hire a taxi to commute. Because of this, traffic congestion, particularly in Kuala Lumpur, is a serious problem.

Delivery systems, such as postal services, were also not convincing. The country still suffered from a poor postal service. There is one postal carrier in the country, that is Pos Malaysia. However, Pos Malaysia does not deliver items promptly, and most of the time the receiver needs to collect them from the post office. A typical letter, for example, will take three of four days to arrive at the receiver's. In addition, Pos Malaysia fails to ensure that mail and parcels arrive on time (*The Sun*, 2007). Although, there is DHL and Couriers services, their services are quite expensive. These points were confirmed by managers during the interviews. Thus, these are major points that need to be considered if government wants to encourage e-commerce among SMEs, particularly those in developing countries. Government should not only provide an efficient technology and

telecommunication infrastructure, but also provide an appropriate basic transportation infrastructure for SMEs to adopt e-commerce.

Another concern that was raised during the interviews was inadequate support from government and e-commerce consultants. Governments and e-commerce consultants usually act as catalysts to increase the diffusion of e-commerce (Hadjimanolis, 1999; Gladwin *et al.*, 2002; Scupola, 2003). They have usually played an important role in influencing SME managers to adopt technologies and ideas. Governments everywhere have considered e-commerce as something which is good for SMEs. In the process of getting SME managers to adopt e-commerce, both the government and e-commerce consultants made many promises to SMEs. However, most of the SMEs were ignored once they adopted the technology. These SMEs suffered with the technology and drifted in their own world without proper direction. Some may have abandoned the technology adopted and some may have stopped using it. When this happened, many SME managers lost trust in the government or IT consultants. This was confirmed by some SME managers in this study. This view is supported by Scupola (2003) and Lawson *et al.* (2003).

The interviews also revealed that a number of SMEs had applied for government grants and assistance, but had not been successful. Some interviewees saw most of the advertised assistance for SMEs as pure political hype. They claimed that only firms with strong political connections were granted assistance. Similarly, some Non-Bumiputra interviewees were convinced that any application for government assistance would be turned down solely on race grounds, which is similar to Mohd Osman's (2001) findings. Despite the misgivings expressed above, a number of SMEs were still intended to apply for government assistance in future. However, most interviewees insisted that the government assistance should be tailored to their requirements. Gray (2006) asserted that government and consultants should not make plans for SMEs without understanding what SMEs want to do, but rather, plan with SMEs to further understand SMEs' needs.

12.6 CONCLUSIONS

This chapter has presented the discussion and reflection of the overall findings presented in Chapters Seven to Eleven. Some of the findings in this study are consistent with previous findings while some others either contradict or add further support to others. The next chapter presents the key findings and contributions of this study based on the findings and discussions in this chapter. It finally concludes this overall thesis.

CHAPTER 13

CONCLUSIONS AND RECOMMENDATIONS

13.0 INTRODUCTION

The main research objective of this study was to understand why some SMEs adopt e-commerce, while others do not. Based on literature reviews and two preliminary studies, a comprehensive model of e-commerce adoption was developed. The model integrates various perspectives using the technological innovation literature, specifically the DOI (Rogers, 1995) and TOE frameworks (Tornatzky and Fleischer, 1990), as a reference discipline to provide a platform for this research in identifying the issue of e-commerce adoption among SMEs in Malaysia. The research methodology combined a questionnaire survey and semi-structured interviews with SME managers and government officials. The questionnaire responses provided quantitative data, analysed using univariate and bivariate non-parametric analysis. Follow-up interviews provided qualitative data on why SMEs adopt e-commerce, the benefits they gained from e-commerce, the government assistance for SMEs to adopt e-commerce, and how and why constraints to adopt e-commerce occur.

Previous chapters have described the findings of the study, with discussion and reflection. This chapter, however, highlights the key findings, the contribution, implications, and limitations of the study. Finally, it gives recommendations and suggests possible future research.

13.1 SUMMARY OF RESEARCH FINDINGS AND CONTRIBUTIONS

This section highlights the research finding and the contribution of this study. Table 13.1 briefly explains the research objectives, the analysis performed to arrive to the findings and contributions in this study.

Table 13.1: Summary of study's research objectives, data analysis used, and research contributions

Research Objectives	Data Analysis	Research Contributions
1. To investigate to what extent SMEs in Malaysia have adopted e-commerce	<p><i>Quantitative Analysis:</i> Utilised coding based on selective coding for the purpose of performing univariate analysis.</p> <p><i>Qualitative analysis:</i> Used semi-structured interviews. Then iteratively match research findings with the literature.</p>	Lists the e-commerce components and the activities that were used among SMEs.
2. To identify the internal factors that facilitate e-commerce adoption	<p><i>Quantitative Analysis:</i> Utilised coding based on selective coding for the purpose of performing univariate and bivariate non-parametric analysis.</p> <p><i>Qualitative analysis:</i> Used semi-structured interviews. Then iteratively match research findings with the literature.</p>	Identifies internal factors: the managerial and firm demographic characteristics that foster e-commerce adoption. The list of the factors contributes to the technological diffusion literature.
3. To investigate the external factor - the influence of government grant in e-commerce adoption	<p><i>Quantitative Analysis:</i> Utilised coding based on selective coding for the purpose of performing univariate and bivariate non-parametric analysis.</p> <p><i>Qualitative analysis:</i> Used semi-structured interviews to get the details insights of the issues being studied.</p>	<ul style="list-style-type: none"> • Adds to the literature of technological diffusion, particularly on the government support programmes. • Exploratory assessment of firm that received government supports.
4. To investigate the most significant reasons for and benefits of e-commerce adoption	<p><i>Quantitative Analysis:</i> Utilised coding based on selective coding for the purpose of performing univariate analysis.</p> <p><i>Qualitative Analysis:</i> Used semi-structured interviews to get the details insights of the issues being studied.</p>	<ul style="list-style-type: none"> • Identifies reasons why SMEs adopt e-commerce and benefits they gained from it. • Generates a refined list of the most significant reasons for and benefits of e-commerce adoption.
5. To identify the factors that inhibits e-commerce adoption.	<p><i>Qualitative Analysis:</i> Used semi-structured interviews to get the details insights of the issues being studied.</p> <p><i>Quantitative Analysis</i> Used univariate analysis to find ranking.</p>	<ul style="list-style-type: none"> • Adds to the literature of technological diffusion, particularly on the factors that inhibit e-commerce adoption.

13.1.1 Key Findings of the Study

Some key findings and contributions of the research are described below:

- A noticeable variation in the exploitation of e-commerce among SMEs is revealed in this study. E-commerce usage among SMEs is still limited to e-mail. However, it has become a means of maintaining a business relationship. It is typically the first step in e-commerce, which can then lead to more advanced e-commerce activities. At present, many SMEs have websites mainly to promote the company's goods and services, and the company itself. A website with online payment facilities and online buying are rare among SMEs in this study. One interesting finding in this study is that SME managers are not only reluctant to trade online, but are also hesitant to put prices on their products and services on websites. This is because SME managers are concerned that other firms might imitate their online prices or undercut them.

- Three SME manager demographic characteristics and all the SME demographic characteristics that were used in this study show some association with e-commerce adoption. These demographic characteristics are: manager's education, manager's experience living abroad, and manager's age (managerial demographic characteristics), economic sector, location of a firm, firm size, firm age, and IT resources (SME demographic characteristics). Overall, these factors contribute to the technological diffusion literature, particularly the DOI and TOE frameworks. It highlights the importance of organisational demographic characteristics on the extent of e-commerce adoption in SMEs in this study. Some important findings found in this study are described below:
 - Educational level and age of SME managers seem important in e-commerce adoption among SMEs in this study. There is an indication that the higher the education a SME manager has; the more complex website activities are being adopted. Similarly, the older the SME managers, the more e-commerce activities they adopt.

- This study also found that many managers who have lived overseas, particularly in the developed countries tend more readily to adopt e-commerce, such as online buying and websites with online payment. There is scant research conducted on how overseas experience affects the decision of e-commerce adoption in SMEs. This study provides an important contribution. Living abroad increases managers' awareness of e-commerce and exposes them to new ways of thinking. Experience of a proper infrastructure and appropriate e-commerce systems, such as eBay and PayPal which are widely used in western countries, have given SME managers an awareness of opportunities to buy and sell online.
- SME demographic characteristics seem to have a greater impact on e-commerce adoption in this study. Firm economic sector, firm size, and firm age also show some influences on e-commerce adoption among SMEs in this study. Firms in a service sector tend to adopt more e-commerce compared to firms in the manufacturing sector. Similarly, larger SMEs tend to adopt e-commerce, particularly websites with complex activities more than smaller SMEs. One interesting finding of this study is that buying online seems to favour smaller SMEs. Younger firms also seem to adopt e-commerce more than older firms. It is likely that ICT infrastructure was available when such SMEs first started their businesses - they were able to choose applications tailored to their needs.
- One interesting finding with regard to SME demographic characteristics is the location of an SME. Location of an SME is found to be a factor to encourage e-commerce adoption. However, it is not the location *per se* which matters most, but most importantly the infrastructure in that location. SMEs need a location with appropriate technology infrastructure with high broadband penetration, and also basic infrastructures, such as uninterrupted power supplies, public transportation service and also an efficient postal system. This is one of the most important findings this thesis.

- SMEs which spend more on IT invest in more complex IT than other firms. However, one interesting outcome found in this study is that the role of IT specialists in e-commerce adoption among SMEs. SMEs which adopt e-commerce claim that they do not need IT specialists to adopt e-commerce; whereas those which do not adopt e-commerce claim that an absence of IT specialists is one of the biggest impediments.
- Most SMEs in this study adopt only simple websites, such as websites with online brochureware and online catalogue regardless of whether they receive an e-commerce grant. However, when it comes to website activities, SMEs without an e-commerce grant have more complex website activities than SMEs with a grant, which indicates that SMEs are able to have more complex websites without any financial assistance from the government. The analysis from this study has found that e-commerce grants seem to increase only slightly the likelihood that SMEs will adopt e-commerce. Interestingly, the interviews with regard to the government e-commerce grant revealed some other important findings. These findings are described below.
 - The interviews revealed that there is a conflict of interest between policymakers and SME managers in this study. The policymakers thought that their e-commerce programmes were remarkable and hence, they wanted to design more grants for SMEs to adopt e-commerce. When the grants were not in favour, they lay the blame on SMEs for not seizing the opportunities offered by the government. SMEs, on the other hand, found that government e-commerce funding was neither appropriate nor adequate. And most important they claimed that most government programmes were tailored to the government's needs, not the SMEs' needs. As such, some SMEs were reluctant to apply for the grant.
 - Some interviewees claimed that most of the government advertised assistance was purely political hype, or that help was channelled to firms with strong political connections. Likewise, a number of Non-

Bumiputra interviewees were convinced that applications for government assistance were decided solely on race grounds.

- Many SMEs were particularly critical of government 'one shot assistance'. They claimed that there was rarely evaluation of government assistance programmes. E-commerce grants were just a typical example of programmes that have not been evaluated. Despite this claim, many interviewed firms still wanted government funding. However, the application for government grants was largely driven by ulterior motives and agendas – to get involved and connected with policymakers.

- Reasons for and benefits of each of e-commerce components were also investigated in this study. Reasons for having e-mail and buying online, and their benefits were almost similar respectively. However, reasons for and benefits of having websites were different. The most important reason why SME managers in this study adopted websites was to enhance the firm's image, not for business efficiency. Similarly, the study also indicated that the most important benefit gained by SMEs in having websites was that SMEs were able to improve their firm's image. The tangible benefits that were found in this study were generally perceived rather than achieved. In general, many SMEs are still sceptical about having websites, especially websites with online ordering and online payment.

- There are ten inhibitors to e-commerce adoption by SMEs found in this study. Among the top five inhibitors found in this study are: concern about security, lack of trust in e-commerce, lack of infrastructure, high cost, and inadequate support from government and e-commerce consultants. One important concern found in this study is the lack of infrastructure, both the technology and the basic infrastructure. Thus, these two issues need to be considered if government wants to encourage e-commerce among SMEs, for example, who would risk buying and selling online if the postal service is unreliable?

- Another two major barriers SMEs face in adopting e-commerce are concern about security and lack trust of e-commerce. Tax evasion, privacy and anonymity, fraud adjudication, and legal liability on credit cards are among the common issues found by researchers in the e-commerce area, a concern also found in this study. Although the government has invested lots of money on the cyber law, such as e-commerce law, copyright law, and digital signatures, to reduce the Internet threat, there are still issues with fraud, intruders, and hackers. In addition to these, computer viruses are another issue. Although many antiviruses have been designed to help government and administrators, new viruses are sometimes produced at an even faster rate.

13.1.2 Contributions of This Study

Based on the findings in described in Chapter 12 and key findings above, there are number of contributions of this research. The contribution of this study can be described in three aspects:

13.1.2.1 Contributions to theory

- A major contribution to theory is that this research adds value to the organisation of technological diffusion literature, particularly in the DOI and TOE frameworks and findings from various perspectives of SME and SME managers. Based on the DOI and TOE frameworks as a reference discipline, the researcher developed a model consisting of managerial and organisational demographic characteristics as internal factors and government support as external factors. Reasons and benefits that SMEs gained from e-commerce, as well as inhibitors to the adoption of e-commerce were also discussed. The use of the demographic characteristic approach in particular provides the researcher an insight into the real situation that SMEs face. Understanding the reasons why SME managers adopt e-commerce, the benefits they gained from it, and the inhibitors they faced from possible adoption provide the researcher with a more fruitful understanding of e-commerce adoption. It is hoped that further theoretical development and empirical studies can be made based on this framework.

- Other factors found in managerial and organisational demographic characteristics include managers' experience living overseas and locational differences. The findings from the study of government support also add some value to the technological diffusion literature. Most studies in e-commerce adoption investigated SMEs that had not received government assistance. These studies concluded that government supports are important to influence the adoption of e-commerce among SMEs. This study, however, looks at both SMEs that received and SMEs that did not receive government support. It concludes that government support contributes very little additionality to SMEs, but that SMEs still need government support because of different agendas. This finding should add to the literature on SMEs and ICT adoption, particularly in a developing country.

13.1.2.2 Contribution to methodology

- This study used both survey and semi-structured interviews. Although some studies have adopted this method, they are not as extensive as this study. This study used a large scale survey and semi-structured interviews with both policymakers and SME managers. 3,535 population surveys were used and 40 interviews were carried-out (12 policymakers and 28 SME managers). Such a large study is rare in studies of technological diffusion adoption in Malaysia.
- Another contribution of this research that should be noted is the use of a mix of languages in the semi-structured interviews between the researcher and respondents. Most studies that used semi-structured interviews have either used English as a medium of conversation or the mother tongue language. This study, however, used both languages, a combination of English and Malay languages. With the use of both languages, rapport between the researcher and SME managers could easily be built and the interview was often more like a conversation. This is one of the advantages in using the interview method in non-English countries, as long as the interviewer has a background in the native language. The exploitation and development of this technique is a specific contribution that this study makes.

13.1.2.3 Contribution to practice

- This study has provided SME managers, academics, as well as policymakers, an understanding of e-commerce adoption by SMEs in Malaysia, i.e. what kind of e-commerce activities are actually used by SME managers, factors that encourage SMEs to adopt e-commerce, reasons why SMEs adopt e-commerce, benefits they gain from it, and the inhibitors to adopting e-commerce. An understanding on these issues will contribute to the development of effective support for SMEs. It will help government to design programmes and initiatives tailored to SME's needs. In addition, academics as well as the practitioners can understand the constraints SMEs face in adopting technology, particularly e-commerce.
- The study contributes to the existing literature on SME e-commerce development by suggesting that SME management faces major decision dilemmas: e-commerce adoption drive. By understanding the holistic issues of e-commerce adoption, the importance of managerial and organisational demographics characteristics is identified.
- Another key contribution of this research is the exploratory assessment of government e-commerce programmes in developing countries, such as Malaysia. Like most of the government's programmes in Malaysia, there has been no assessment of the e-commerce grant. This study is among the first to provide some evidence of the Malaysian government's funding for SMEs to adopt e-commerce. The findings of the study will be beneficial to fine tune current government ICT policies, particularly in carrying out evaluations in the of e-commerce initiatives in Malaysia.
- Finally, it is important to highlight that most of the existing studies on e-commerce and SMEs have focused on developed countries. This study focuses on a developing country: Malaysia. Malaysian SMEs are usually not part of international studies. Thus, this study brings in a new, possibly fresher, wider and more inclusive perspective on the adoption of e-commerce by SMEs.

13.2 IMPLICATIONS AND RECOMMENDATIONS

On completion of this research, and drawing upon the literature in this field, the researcher is convinced that implementing the recommendations set out below could enhance e-commerce adoption in Malaysia.

13.2.1 Improve Understanding of E-commerce

SME managers said that working in the SME environment is not easy. They need to be highly self-motivated because they are the driving forces behind their companies. Many of them were interested in going into SMEs because they wanted to be their own boss. In the past, SMEs focused their activities on their own domestic markets and on face-to-face interactions. But the Internet has changed many things; it is an irresistible force that affects, positively and negatively, the great majority of SMEs. The opportunities for SMEs to engage in e-commerce are numerous and diverse. In order to survive in this competitive and global marketplace, SME managers need to keep on improving themselves and see how technology, such as e-commerce, can be of help. They have to keep reinventing to be competitive, especially with the advent of globalisation and borderless trading. The Internet and e-commerce are important for innovation, just like education, finance or skills, requiring a redefinition of business processes and doing things differently.

E-commerce demands a radical change in the company's strategy and logistics. It requires time and resources, which are precious and scarce in SMEs. It is vital for SME managers to take e-commerce seriously if they really want to invest in it. They need to have a clear objective whether e-commerce brings value to their companies. To do this, they need to find the right information about e-commerce. SME managers need to be educated about the potential of e-commerce and learn from the experience of others, which may not necessarily be Malaysian-based. They also need to identify which e-commerce activities are appropriate for them. Without adequate information, the anticipated benefits of e-commerce and its development cannot be achieved.

13.2.2 Improve the Performance of the Infrastructure

A clear message from this study is that the government is not providing appropriate infrastructure. Most of the goods purchased over the Internet are still delivered in the conventional way (i.e., physical delivery). Hence, poor roads and bridges, inefficient transport systems, coupled with the high cost of international parcel services and bureaucratic customs clearance processes, are major obstacles in e-commerce adoption in developing countries – as discussed in Chapter 12. The accessibility of the Internet is also another problem. One of the aims of telecommunications policy and legislation is to ensure that the public has access to basic telecommunications services at a reasonable cost. Hence, the goal should ultimately be widespread access to reliable information and communication services at a reasonable cost.

Based on this background, the researcher would put forward the following recommendations:

a. Quality and speed of distribution logistics (i.e., roads and bridges)

The government should create a policy environment that will:

- encourage investment in the national physical and transport infrastructure. Access to public transportation should be more effective, where trains, buses, and taxis can be linked to each other; and
- provide maximum efficiency to the nation by streamlining the bureaucracy and allowing for more transparent, predictable, and efficient postal operations. Perhaps, government should end the postal monopoly and contract out to some other agencies to get more efficient services.

b. Telecoms pricing and performance

To enhance the quality of telecommunications services, policies should encourage:

- ‘bridging the digital divide’ by promoting easy access to inexpensive information networks;
- open access – allowing competitive practices by network providers so that users can choose their network providers;

c. Enhance the quality of security

It is important that, the government adopts policies, laws and incentives that focus on promoting trust and confidence among e-commerce participants as well as developing a national framework that is compatible with international norms on e-commerce (covering, for instance, contract enforcement, consumer protection, liability assignment, privacy protection, intellectual property rights, cross-border trade, and improvement of delivery infrastructure). The e-commerce initiatives of government are a barometer indicating whether or not the infrastructure supports e-commerce use by private firms. This means that if the government is unable to engage in e-government, such as e-procurement, secure records online or have customs fees remitted electronically, then the private sector will also have difficulties in e-commerce uptake.

d. The existing legal systems in most developing countries are not sufficient to protect those engaged in e-commerce. For example, with respect to contracts, existing laws were conceived at a time when the word 'writing', 'document' and 'signature' referred to things in paper form. On the other hand, in today's e-commerce transactions, paper is not used for record-keeping or entering into contracts. Thus, governments should also pay attention to issues below:

- legal recognition of e-commerce transactions;
- consumer protection from fraud;
- protection of consumers' right to privacy;
- legal protection against 'hacking' (or unauthorized access to computer systems); and
- protection of intellectual property.

13.2.3 Reviewing Government Support for SMEs

Any government has limited resources for influencing technological progress, and it is important to allocate those resources in a way that maximises the potential economic benefits. The ideal scenario in Malaysia would be for the government to identify those sectors that are most likely to have a high pay-off in terms of stimulating and sustaining high quality economic growth. At present, the

government tends to adopt a 'shotgun' approach and this research presents evidence of 'political connection' in the allocation of funds. The authorities in Malaysia need to review existing assistance programmes to ensure that allocation is to the right SMEs. Whatever the form of government assistance, it should be promoted to all SMEs, irrespective of ethnic background or political connection.

Policymakers have often created programmes to promote ICT, particularly e-commerce, to SMEs. However, most of their programmes have a 'one-size-fits-all' approach that pays little attention to the specific needs and challenges facing each company. In Malaysia, most government programmes were designed in a hurry without proper planning (as discussed in Chapter 9). They are usually created to meet, not the SMEs' needs, but the policymakers' target levels. To make matters worse, the government has rarely published any evaluation of the effectiveness of policy programmes. Indeed, the authorities do not evaluate the relationship between the cost of each measure and the investment that would not have been undertaken in the absence of the incentive, the possible misallocation of resources resulting from the incentive, the net welfare gain or losses to SMEs (WTO, 1997).

There is a need to help the government improve their programme and ability to reach the right SMEs. In order to do that, the government programmes need to be evaluated to identify what works, what does not, and take appropriate action to examine the impact of what is being done. Policymakers should design initiatives appropriate to the SMEs they really wanted to help. To do this, they must be aware of the nature of the SME sector. They should not provide a 'one-size-fits-all' assistance because SMEs are not all the same. SMEs with 10 employees have different needs from SMEs with 200 employees. Government, also, should not see SMEs as miniature large firms that, nurtured and given the opportunity, will grow and become multinational corporations. They should try to understand SMEs and "to talk business in their own terms" (Gray and Zapalla, 2006). Perhaps government programmes to help SMEs, especially in adopting ICT, should be much more selective so that resources are not wasted (Macdonald, 1987; Scupola, 2003).

It is also important that SMEs have a voice in national and international level discussions with governments. SMEs should participate in policy dialogue. This is to avoid government planning *for* SMEs, rather than *with* them. At present, most of the government assistance is dictated by policymakers and their beliefs. In encouraging SMEs to adopt e-commerce, policymakers should not impose a policy for every SME to adopt e-commerce and they should not assume that every SME requires a website with online capabilities. However, government should provide the entire necessary platform to undertake e-commerce, such as a good transportation system and ICT infrastructure. SMEs should decide for themselves what the best option is for their business.

13.3 LIMITATIONS OF THE STUDY

This study has provided important insights into e-commerce adoption among SMEs in Malaysia. It has asked why SMEs adopt e-commerce, what are the constraints on the adoption of e-commerce, and the benefits of having e-commerce in their business. It has looked particularly at government support for SMEs to adopt e-commerce. However, this study has a number of limitations.

- This study is cross-sectional in nature. Data collection is limited to a single time point. Therefore, changes over time cannot be assessed. Owing to the inherent time constraints in a study of this kind, the adoption decision, which may have required a longitudinal perspective, was not investigated. The study will, however, generate a significant data set that can be examined for potential relationships between SME and SME manager demographic characteristics, and e-commerce adoption. This can be used to formulate hypotheses for future research.
- Most literature on e-commerce adoption by SMEs takes a technological stance, such as e-commerce awareness among SMEs and benefits SMEs can gain from e-commerce. Few studies look at the real issues that SMEs and their managers face in adopting e-commerce. The researcher needed to make

contact with some SME managers first to understand the actual situation, which is very time consuming and prolonged the research study.

- In terms of methodology, this study adopted two research strategies: a mail questionnaire survey to SME managers, and semi-structured interviews with SME managers and top government officials. The biggest drawback with questionnaires is the risk that answering the questionnaire is delegated to someone not involved in decision making. Therefore, the researcher has to accept the completed questionnaires in good faith (Shariff, 2000; Wahab, 1996). It is also possible that respondents give the answers they think the questioner wants to hear during the interviews. It is also crucial that an interviewee is prepared to accept the presence of the researcher in the organisation and to relay the relevant information. It proved difficult to obtain full co-operation from certain SME managers and government officials: Malaysia is a multi-racial, multi-lingual society, and there is particular sensitivity in some communities about questions concerned with profit, turnover and funding of the business. Most interviewees refused to allow the researcher to tape-record the interviews at the beginning. However, after convincing the interviewees that the tape-recording was only for academic purposes, the interviewees finally agreed. The researcher also sometimes had to rely on memory and written notes when analysing information, particularly when the interviews were carried out in public places.
- The interviews were conducted with top government officials from government bodies, including MTDC, MITI, MOSTE, and SMIDEC. The discussion covered a number of sensitive areas, such as the amount of funding allocated for SMEs to use ICT, particularly e-commerce, details of companies receiving government grants, and whether the government was aware of what happens to the companies after they received the funding. However, these organisations are very sensitive to any possible criticism, and it was difficult to obtain co-operation from some individuals. Even when they did agree to be interviewed, they were reluctant to disclose information deemed to be sensitive.

13.4 FUTURE RESEARCH DIRECTION

Building on this research, there are opportunities for further work; especially on the key issues discussed in this thesis.

- A number of variables in this study, concerned with the demographic characteristics of SMEs and managers, are not relevant to e-commerce adoption by SMEs. Similarly, some of the reasons for e-commerce adoption and its benefits seem to be less significant than others. However, this study should not be viewed as constituting a total rejection of such variables in explaining e-commerce adoption among SMEs. The present research could serve as a starting point for more detailed studies, by involving both the adopters and the non-adopters of e-commerce. Future studies should tackle such an assignment using multivariate analysis. This may yield a more accurate and comprehensive profile of SMEs and SME managers, in the underlying populations of SMEs in Malaysia, as well as the recognition of the actual reasons for e-commerce adoption and its benefits to SMEs.
- As stated in the limitations section, innovation-related theories, such as the technological-organisational-environmental theory, and the diffusion of innovation theory, dominate most of the previous works on e-commerce. Future work should focus on other perspectives, such as the practical experience of SME managers and policymakers, and other theoretical perspectives, such as marketing, and entrepreneurship or strategic management.
- There is a need for more focused research on government assistance issues. In this study, the analysis of government e-commerce grants is at a very much exploratory level, due to the relatively modest number of firms that received grants. The e-commerce grant scheme is supposed to encourage SMEs to adopt e-commerce; yet representatives of SMIDEC were reluctant to reveal details on how and why SMEs were chosen. The researcher hopes that in future, SMIDEC and other government bodies will adopt a more open and transparent approach towards research opportunities. A comparison between

SMEs that received a government ICT grant and successfully utilised it, and those that failed to utilise it, should also be made. This may yield more accurate and comprehensive information for SMEs, as well as for the government. The ultimate aim is to enable the government (and/or the private sector) to channel support to firms that have the potential to succeed.

- The interviews involved eighteen SMEs from various market segmentations that do not adopt e-commerce – two SMEs had never had an Internet connection; two SMEs had Internet and e-mail, but had stopped using them; two SMEs had e-mail, but never had a website; five SMEs had stopped using websites; and seven SMEs had previously had a complex website, but had reverted to a simpler website. Within these eighteen SMEs, five had stopped buying online. A more comprehensive study of these issues should concentrate on such firms. Case or longitudinal studies of such firms may provide a more comprehensive understanding of these issues.
- The results also indicate that government support is not a key differentiator between adopters and non-adopters of e-commerce in Malaysia. Malaysia is a developing country, where government policies affect almost every industry. It would be interesting to examine the role of government in a non-Asian context, where the private sector may be expected to play a leading role in the adoption of e-commerce. Alternatively, it would be interesting to study e-commerce adoption in an Asian country, where government support is not as salient as it is in Malaysia.
- The previous comments have highlighted the deficiencies in the provision of government support for SMEs. The authorities should commission research to establish the extent to which its support is essential, rather than simply giving assistance to firms that would have invested anyway. If under-utilised schemes are found to be effective, they should be promoted more strongly; and if schemes are judged to be ineffective, they should be scrapped. Even a 'rough and ready' evaluation should enable the government to rationalise its initiatives significantly and present a more coherent portfolio to SMEs.

13.5 CONCLUSIONS

This study has provided a holistic understanding of e-commerce adoption among SMEs in Malaysia. There is little research as extensive as this, which assesses e-commerce adoption by SMEs. This model may be comprehensive for e-commerce adoption in firms. Future research can build on and extend the proposed integrated model by including other potential factors from different contexts. It will therefore be necessary to explore other statistical analyses, either of the same factors or of new ones. Furthermore, the findings will help to obtain a better understanding of the facilitators for firms and the government, and propose a quantitative basis for them to determine favourable policies and conditions for expanding their e-commerce. In general, this study provides the impetus for future research on many issues.

The purpose of any doctoral research is the creation of new knowledge; however, dissemination activities also rank high in importance. Some of the work in this thesis has been presented at international conferences and seminars. Future work will also include publication in international management journals that cover some of the following topics: international business, SME companies, SME managers, the role of information, and family businesses.

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APPENDIX I

E-commerce activities used in various studies

Authors and titles	Definition of e-commerce used	Scale items to measure e-commerce activities	Analysis of e-commerce activities	Analysis of Technology/ Application Used
1. Pool <i>et al.</i> (2006) Are SMEs Meeting the Challenge of Integrating E-commerce into their Businesses? A Review of the Development, Challenges and Opportunities	E-commerce defined here as the sharing of business information, maintaining business relationships, and business transactions by means of telecommunication network.	<ul style="list-style-type: none"> - Buying and selling products or services 	<ul style="list-style-type: none"> - Communication - Selling - Purchasing 	E-mail Website for online selling Supply chain management
2. Fillis <i>et al.</i> (2004) Factors Impacting on E-Business Adoption and Development in the Smaller Firm	Any business carried out over an electronic network.	<p>All types of business activities:</p> <ul style="list-style-type: none"> - Exchanging data files - Having a website - Using other companies' website - Buying and selling goods and services online <p>It does not include sending and receiving text-based e-mail messages.</p>	<ul style="list-style-type: none"> - Distribution - Purchasing - Selling <p>of products and services</p>	E-mail Website for online selling Online buying
3. Grandon and Pearson (2004)	E-commerce is defined as the process of buying and selling products or services using electronic data transmission (EDT) via the Internet and the www. This excludes promote marketing, advertising, customer support, mere usage of e-mail and web site for electronic publishing.	<ul style="list-style-type: none"> - Buying and selling products or services 	<ul style="list-style-type: none"> - Purchasing - Selling <p>of products and services</p>	Website for online selling Online buying

<p>4. Mackay et al. (2004) A Model of Electronic Commerce Adoption by Small Voluntary Organisations</p>	<p>E-commerce adoption is defined as the establishment of a company website to share information, maintain relationships and conduct transactions using electronic networks.</p>	<ul style="list-style-type: none"> - Information sharing - Marketing tools - Donations and revenue generations - Ability to attract volunteers and in-kind donations - Ability to raise funds 	<p>- Exchange business information</p> <p>- Marketing of products and services</p>	<p>Website for online selling</p>
<p>5. Mustafa and Beaumont (2004) The Effect of Electronic Commerce on Small Australian Enterprises</p>	<p>E-commerce is a process of electronically conducting all forms of business activities between entities in order to achieve the organisation's objectives.</p>	<ul style="list-style-type: none"> - Web page - Attract new customers - Expand local markets - Have an FAQ page - Tailor products/services to customers - Stay in touch with customers - Receive timely feedback - Advertise on the Internet - Reduce advertising cost - Use of the Internet - Expand products/services - Enter overseas markets - Oversee competitors into Australian market - Bypass traditional supplier - Sell direct to customer - Use Internet EDI - Cut order and delivery time - Reduce data entry cost - Increase data transfer speed - Reduce data entry errors - Hold less inventory - E-mail - Stay in touch with customers - Stay in touch with suppliers - Stay in touch with business partners - Stay in touch with employees 	<ul style="list-style-type: none"> - Marketing - Distribution - Purchasing - Selling - Exchange business information - of products and services 	<ul style="list-style-type: none"> EDI EFT E-mail Internet activities: - Website - FAQ - Online catalogues - Online ordering - Order tracking - Tendering - Online interaction exemplified by booking - Banking services EDT

6.	Thompson and Ranganathan (2004) Adopters and Non-Adopters of Business-to-Business Electronic Commerce in Singapore	B2B e-commerce is defined as the use of the Internet and Web-technologies for conducting inter-organisational business transactions.	<p>Customer-related activities:</p> <ul style="list-style-type: none"> - Accept and process customer - Pre-sales activities/services - Post-sale service (e.g., complaints, support, etc.), - Product/service delivery via the Web - Distribution activities (supply chain coordination, etc.) - Gathering customer data and analysis - Accept and process customer payments <p>Supplier-related activities:</p> <ul style="list-style-type: none"> - Purchase order processing - Procurement from suppliers - Supplier selection - Invoicing and payment processing - Demand management 	<ul style="list-style-type: none"> - Distribution - Exchange business information - Purchasing - Selling <p>of products and services</p>	<p>Website Extranet</p>
7.	Daniel (2003) An Exploration of the Inside-Out Model: E-commerce Integration in UK SMEs	E-commerce is defined as buying and selling of information, products and services via Internet, e-mail, intranets and to exchange or share information either within the firm itself or with external stakeholders.	<p>Customers:</p> <ul style="list-style-type: none"> - Advertising - Providing company information - Providing information on goods or services - Communication with customers and suppliers - Document exchange with customers and suppliers - Taking order - Receiving payment - Delivery (of digital goods or services) - After sales service or contact <p>Suppliers:</p> <ul style="list-style-type: none"> - Identifying new inventory suppliers - Ordering and payment of inventory purchasing 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Purchasing - Selling <p>of products and services</p>	<p>E-mail Website</p> <ul style="list-style-type: none"> - Electronic Brochure - On-line catalogue - Customer feedback form - Online customer registration form - Online ordering - Online payment

			<ul style="list-style-type: none"> - Non inventory purchasing Other stakeholders: - Recruitment - Communication with shareholders and investors Internal operations: - Communication between employees - Information search (external to company) 			
8.	Lertwongsatien and Wongpinunwatana (2003) E-commerce adoption in Thailand: An empirical study of SMEs	E-commerce defined here as the sharing of business information, maintaining business relationships, and business transactions by means of telecommunication network.	<ul style="list-style-type: none"> - Sharing of business information - buying and selling products or services 	<ul style="list-style-type: none"> - Exchange business information - Purchasing - Selling <p>of products and services</p>	All kind of telecommunications network including Internet-based activities	
9.	Scupola (2003) The Adoption of Internet Commerce by SMEs in the South of Italy: An Environmental, Technological and Organisational Perspective	E-commerce defined here as the sharing of business information, maintaining business relationships, and business transactions by means of telecommunication network.	<ul style="list-style-type: none"> - Basic or no online capabilities - Have a website, no advanced capabilities - Take orders and provide customer service on website - Make complete transactions and receive payment on website. 	<ul style="list-style-type: none"> - Selling - Purchasing - Exchange business information <p>of products and services</p>	<ul style="list-style-type: none"> Internet E-mail Website Online catalogue 	
10.	Rao et al. (2003) Electronic Commerce Development in Small and Medium Sized Enterprises	E-commerce is a business model where transactions and interactions of information and data are primarily conducted between businesses and between customers, using electronic means in order to complete those processes more effectively and efficiently across the spectrum of a	<ul style="list-style-type: none"> - Web presence - Window to the Web - No integration - E-mail - Portals - Profiles - 2 way communication - E-mail 	<ul style="list-style-type: none"> - Marketing - Distribution - Selling - Purchasing - Exchange business information 	<ul style="list-style-type: none"> Internet E-mail Website Online ordering E-marketplaces Online payment 	

		business.	<ul style="list-style-type: none"> - Order placing - Cookies - No transactions - Transactions integration - B2B/B2C - Communities - E-marketplaces - Auctions - Full transaction - Low level collaboration - Enterprises integration - E2E - Full integration - E-business 	<ul style="list-style-type: none"> - of products and services 	
11.	Seyal and Abd Rahman (2003) A Preliminary Investigation of E-Commerce Adoption in Small & Medium Enterprises in Brunei	No specific e-commerce definition.	<ul style="list-style-type: none"> - Marketing activities - Communicate with customers - Market research - Find new suppliers - Gain international penetration - Implement sales configuration management software - Do B2B transactions with suppliers 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Selling - Purchasing - of products and services 	<ul style="list-style-type: none"> - Internet - Website - Web server
12.	Yeung et al. (2003) Current Progress of E-Commerce Adoption: Small and Medium Enterprises in Hong Kong	No specific definition of e-commerce.	<ul style="list-style-type: none"> - Customer-related - Improve information exchange with customers - Improve customer service - Enhance customer loyalty and retention - Supplier-related: - Improve information exchange with suppliers - Reduce costs through web based 	<ul style="list-style-type: none"> - Exchange business information - Distribution - Selling - Purchasing - Marketing - of products and services 	<ul style="list-style-type: none"> - Website - E-mail

			<p>purchasing and procurement</p> <p>Corporate-related:</p> <ul style="list-style-type: none"> - International market exposure - Reduce cost of maintaining company information 	services	
13.	<p>Daniel and Grimshaw (2002)</p> <p>An exploratory comparison of e-commerce adoption in large and small enterprises</p>	<p>E-commerce is defined as buying and selling of information, products and services via Internet, e-mail, intranets and to exchange or share information either within the firm itself or with external stakeholders.</p>	<p>Set of e-commerce activities based on focus of activity:</p> <p>Competitors:</p> <ul style="list-style-type: none"> - Compete with other firms - Find new customer <p>Customers:</p> <ul style="list-style-type: none"> - Pressure from customers - Provide enhanced service - Enter dialogue with customers - Advertising and brand building - Longer opening hours <p>Internal operations:</p> <ul style="list-style-type: none"> - Make cost savings - Improved internal communication <p>Suppliers:</p> <ul style="list-style-type: none"> - Find new suppliers - Improved purchasing terms 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Selling - Purchasing <p>of products and services</p>	
14.	<p>Daniel et al. (2002)</p> <p>Adoption of E-Commerce by SMEs in the UK: Towards a Stage Model</p>	<p>E-commerce is defined as buying and selling of information, products and services via Internet, e-mail, intranets and to exchange or share information either within the firm itself or with external stakeholders.</p>	<p>E-commerce activities:</p> <ul style="list-style-type: none"> - Providing company information - Providing information on goods or services - Taking order - Receiving payment - Delivery (of digital goods or services) - After sales service or contact - Identifying new inventory suppliers - Ordering and payment of inventory 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Selling - Purchasing <p>of products and services</p>	<p>E-mail</p> <p>Website</p> <ul style="list-style-type: none"> - Electronic Brochure - On-line catalogue - Customer feedback form - Online customer registration form - Online ordering

			<ul style="list-style-type: none"> - purchasing - Non inventory purchasing (e.g., travel, stationery) - Communication with customers and suppliers - Document exchange with customers and suppliers - External information search - Communication with shareholders and investors - Advertising - Recruitment 		<ul style="list-style-type: none"> - Online payment
15.	<p>Daniel and Wilson (2002)</p> <p>Adoption Intentions and Benefits Realised: A Study of E-Commerce in UK SMEs</p>	<p>E-commerce is defined as buying and selling of information, products and services via Internet, e-mail, intranets and to exchange or share information either within the firm itself or with external stakeholders.</p>	<p>Customers</p> <ul style="list-style-type: none"> - Enter a dialogue with customers - Advertising and brand building - Longer opening hours - Deliver digital goods and services - Find a new customers - Pressure from customers - Provide enhanced services <p>Competitors</p> <ul style="list-style-type: none"> - Compete with other firms <p>Internal process</p> <ul style="list-style-type: none"> - Make cost savings - Find external information - Improved internal communications - Recruitment <p>Suppliers</p> <ul style="list-style-type: none"> - Find new suppliers - Improved purchasing items. 	<ul style="list-style-type: none"> - Exchange business information - Marketing - Distribution - Selling - Purchasing <p>of products and services</p>	<ul style="list-style-type: none"> E-mail Website Intranet

16.	<p>Lewis and Cockrill (2002)</p> <p>Going Global - Remaining local: the Impact of E-Commerce on Small Retail Firms in Wales</p>	<p>E-commerce is defined as using an electronic network to simplify, improve and speed up particular stages of the business process, i.e. buying, selling and delivering of goods and services.</p>	<p>E-commerce adoption ladder:</p> <ul style="list-style-type: none"> - Messaging - Online marketing - Online ordering - Online payment - Order progress - E-business 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Selling - Purchasing <p>of products and services</p>	<p>E-mail</p> <ul style="list-style-type: none"> Online marketing Online ordering Online payment Online sales support
17.	<p>Quayle (2002)</p> <p>E-Commerce: The Challenge for UK SMEs in the Twenty-First Century</p>	<p>No definite e-commerce definition defined.</p> <p>E-commerce can take variety of forms including electronic data interchange (EDI), mobile telephone, direct link-ups with suppliers, Internet, intranet, extranet, electronic catalogue ordering, and e-mail.</p>	<p>E-commerce activities:</p> <ul style="list-style-type: none"> - Competitive advantage - Cost savings - Time saving - Improved supplier relations - Better customer service - Employment growth - Improved accountability - Own organisation 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution <p>of products and services</p>	<p>EDI</p> <ul style="list-style-type: none"> E-mail Website Online catalogue Online ordering Internet Intranet Extranet
18.	<p>Scupola (2002)</p> <p>Adoption Issues of Business-to-Business Internet Commerce in European SMEs</p>	<p>E-commerce defined here as the sharing of business information, maintaining business relationships, and business transactions by means of telecommunication network.</p>	<p>Finding on usage of e-commerce:</p> <ul style="list-style-type: none"> - Communication medium to exchange information - Taking and confirm orders - Sending the information relative to inventory - Sending the digital images of the products - Sending invoices - Internet banking - Market research to find suppliers of products and customers 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Selling - Purchasing <p>of products and services</p>	<p>Internet access</p> <p>Website</p>

19.	<p>Raymond (2001)</p> <p>Determinants of Web Site Implementation in Small Businesses</p>	<p>E-commerce in this article comprises functions of information exchange and commercial transaction support that operate on telecommunication networks.</p>	<p>Implementation of website:</p> <p>Information implementation</p> <ul style="list-style-type: none"> - Provide information on agency products and services - Provide operational information (procedural manual) - Promote products and services - Receive customer suggestions <p>Transactional implementation</p> <ul style="list-style-type: none"> - Sell products and services online - Provide online services for product sold - Bill customers online - Receive payments online - Order from suppliers <p>Strategic Implementation</p> <ul style="list-style-type: none"> - Increase customer loyalty by establishing tighter and more personalized relationships - Increase the number of the agency's suppliers - Form strategic alliances with other organisations - Innovate and develop new products or services - Enter new markets - Exchange and commercial transaction 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Selling - Purchasing <p>of products and services</p>	<p>Website</p>
20.	<p>Kendall et al. (2001)</p> <p>Receptivity of Singapore's SMEs to e-commerce adoption</p>	<p>A task or transaction needing to be communicated to an array of customers (members of a social system) or firms within an industry or markets.</p>	<p>Focus on the willingness to adopt different stages of doing business over the Internet, ranging from having a homepage to conduct transaction on-line:</p> <ul style="list-style-type: none"> - Seeking information 	<ul style="list-style-type: none"> - Exchange business information - Selling - Purchasing 	<p>Web browsing</p> <p>E-mail</p> <p>Website</p>

				of products and services	
21.	Mackay et al. (2001) Empirical Test of an Electronic Commerce Adoption Model in Small Firms	No specific definition of e-commerce.	<ul style="list-style-type: none"> - E-mail - Buying of items - Selling of items <p>Focus e-commerce on whether organisations have a website to conduct buying and selling.</p>	<ul style="list-style-type: none"> - Selling - Purchasing <p>of products and services</p>	Website
22.	Poon (2000) Business Environment and Internet Commerce Benefit - A Small Business Perspective	No specific definition of e-commerce.	<p>Internet commerce activities:</p> <p>Customers:</p> <ul style="list-style-type: none"> - Receive customer orders - Provide customer support - Sales and marketing - Document exchange <p>Suppliers:</p> <ul style="list-style-type: none"> - Send off purchase orders - Monitor delivery status - Price and inventory inquiries - Stock monitoring <p>Partner firms</p> <ul style="list-style-type: none"> - Collaborative work - Document exchange and information sharing - Provide and receive supporting service - Contracting and outsourcing support <p>Competitors</p> <ul style="list-style-type: none"> - Share industry-wide specifications and standards - Intelligence gathering on public forums - Competitive bidding through electronic auctions 	<ul style="list-style-type: none"> - Marketing - Exchange business information - Distribution - Selling - Purchasing <p>of products and services</p>	Internet-based activities

23.	Poon and Swatman (1999) An Exploratory Study of Small Business Internet Commerce Issues	Internet commerce is defined as the sharing of business information, maintaining business relationships, and conducting business transactions by means of Internet-based technology.	<ul style="list-style-type: none"> - Cooperative competition activities of mutual benefit <p>The use of Internet commerce in small business such as e-mail and web browsing for business communication, which include buying and selling.</p>	<ul style="list-style-type: none"> - Exchange business information - Distribution - Selling - Purchasing <p>of products and services</p>	E-mail Websites
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APPENDIX II

Date: 20th Sept 2006

Mr Yap Kim Wah
Managing Director
AAC Distribution Sdn Bhd
25, Jalan Emas Putih
Taman Sri Putri
81300 Skudai, Johor

Dear Mr Yap Kim Wah

I am studying for a Ph.D. at Sheffield University Management School in the United Kingdom. My research is on the adoption and use of e-commerce by small and medium-sized enterprises (SMEs). I would be very grateful indeed for your assistance.

E-commerce is basically conducting business transactions via the Internet. Much is said about e-commerce, yet little is known about its adoption by SMEs in Malaysia. Nor is there much information on how they use e-commerce. The enclosed questionnaire seeks information about e-commerce in your firm, and your views on e-commerce adoption and use. It should take no more than ten or twenty minutes to complete. Please return it in the enclosed self-addressed and stamped envelope as soon as you can. The information you provide will be used only in aggregate and entirely for academic purposes. Neither you nor your company will ever be identified.

All respondents will receive a short report of the survey findings. As a further token of my appreciation, three respondents will be chosen to receive annual subscriptions to either *The Economist* or *Business Week* magazines.

Should you have any questions, please do not hesitate to contact me or my Ph.D. supervisor, Professor Stuart Macdonald, using the e-mail address or telephone number provided below:

Noor Azuan Hashim
Doctoral Researcher
The Sheffield University Management
School
University of Sheffield

Stuart Macdonald
Professor of Information and Organisation
The Sheffield University Management School
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Yours sincerely

Noor Azuan Hashim
Doctoral Researcher

APPENDIX III

The Management School
University of Sheffield
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Sheffield S1 4DT
England
United Kingdom
email: N.Hashim@sheffield.ac.uk



The
University
Of
Sheffield.

**SURVEY OF E-COMMERCE ADOPTION AMONG
MALAYSIAN SMALL AND MEDIUM-SIZED
ENTERPRISES**

Please tick (✓) or write your answer as appropriate.

Your answers are very important to the accuracy of our study.
Please return the completed questionnaire at your earliest
convenience.

**INFORMATION GATHERED IN THIS SURVEY WILL BE
KEPT STRICTLY CONFIDENTIAL**

Thank you for your help.

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The sequence number will be used
for data validation purposes only

General company data

If your company is a branch or subsidiary, answers to all remaining questions should only relate to your company and NOT the whole group.

1. In which economic category would you classify the main activity of your company?

- Services Manufacturing
 Other (please specify): _____

2. Where is the location of your company?

- | | | | |
|--|---|---|--|
| <input type="checkbox"/> Johor | <input type="checkbox"/> Kedah | <input type="checkbox"/> Kelantan | <input type="checkbox"/> Melaka |
| <input type="checkbox"/> Negeri Sembilan | <input type="checkbox"/> Pahang | <input type="checkbox"/> Perak | <input type="checkbox"/> Perlis |
| <input type="checkbox"/> Pulau Pinang | <input type="checkbox"/> Sabah | <input type="checkbox"/> Sarawak | <input type="checkbox"/> Selangor |
| <input type="checkbox"/> Terengganu | <input type="checkbox"/> Wilayah Persekutuan - Kuala Lumpur | <input type="checkbox"/> Wilayah Persekutuan - Labuan | <input type="checkbox"/> Wilayah Persekutuan - Putrajaya |

3. Company registered as:

- sole proprietor private limited company (sdn. bhd.)
 partnership
 other (please specify): _____

4. Type of company structure? (Please tick all that apply)

- Family owned Part of a Malaysian group
 Private owned Part of an international group
 Other (please specify): _____

5. Number of full-time employees (or full-time equivalent) of the company:

a) Now

- fewer than 10 10 - 50 51- 100
 101 - 200 201 - 250 more than 250

b) in 2000

- fewer than 10 10 - 50 51- 100
 101 - 200 201 - 250 more than 250

6. What is the status of your company?

- Bumiputra Non-Bumiputra

7. Year business started (in Malaysia):

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Information technology (IT) of the company

8. Does your company use computers? Yes No

If 'Yes', in which year did the company first use a computer?

9. Does your company employ specialist information technology (IT) staff? Yes No

If 'Yes', please indicate the NUMBER of the following types of staff?

System manager Web designer

System analyst Programmer

Other (please specify):

10. Approximately what proportion of your company's annual budget is spent on IT?

Less Than 5% 5 – 10% 11 – 15% 16 – 25% Over 25%

Other (please specify):

11. Does your company have Internet connection? Yes No

If 'Yes',

a) what type of connection does your company have?

Dial-up Broadband (eg., Streamyx and Jaring)

Other (please specify):

b) in which year did your company acquire its Internet connection?

c) using the scale below, how important is the Internet for your company's business?

Not at all important	Not important	Moderately important	Important	Very important
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Does your company use electronic mail (e-mail) in its business?

Yes No (If 'No' please proceed to Question 13)

If 'Yes',

a) using the scale below, how important is e-mail for your company's business?

Not at all important	Not important	Moderately important	Important	Very important
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b) what activities, does your company use e-mail for? (Please tick all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Communicating with customers/suppliers | <input type="checkbox"/> Sending company brochures to customers/suppliers. |
| <input type="checkbox"/> Accepting customers orders | <input type="checkbox"/> Billing customers |
| <input type="checkbox"/> Personal use | <input type="checkbox"/> Other (please specify): _____ |

E-commerce activities of the company

We define electronic commerce (e-commerce) as "conducting business transactions (such as buying & selling and advertising) by means of Internet-based technology".

13. Does your company use e-commerce in its business?

- Yes No (If 'No' please proceed to Question 23)

14. Does your company ever buy goods and services from other companies by means of their websites (online buying)?

- Yes No (If 'No' please proceed to Question 15)

If 'Yes',

a) does your company order goods and services from other company websites?

- Yes No

b) does your company pay for goods and services through other company websites?

- Yes No

c) using the scale below, how important is online buying for your company's business?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Not at all
important | Not
important | Moderately
important | Important | Very
important |
| 1 | 2 | 3 | 4 | 5 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

15. Does your company have a website? Yes No

(If 'No' please proceed to Question 23)

If 'Yes', please provide your company website address below (optional):

16. In which year did your company first have a website?

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17. Does your company maintain/update its website? Yes No

If 'Yes',

a) How frequently does your company maintain/update its website?

- Every day Every week Whenever possible
 Hardly maintained Other (please specify): _____
 In-house webmaster Out-sourced
 Other (please specify): _____

18. What does your company website do? (Please tick all that apply)

- Provide contact details for your company (**online brochureware**)
 Provide information about your company's goods and services, but no prices (**online catalogue**)
 Provide information about your company's goods and services with prices (**online catalogue with prices**)
 Receive customer inquiries about your company's goods and services, including their price (**online inquiries**)
 Receive customer orders (**online ordering**)
 Receive customer payments (**online payment**)
 Other (please specify): _____

19. What are your company's reasons for having a website? (Please tick all that apply)

- To lower costs To eye new business opportunities
 To enhance the company image To qualify for government incentives/subsidies
 To follow the trend Website essential part of business
 A website is nice to have To allow the company to trade internationally
 Pressure from customers To compete with other company websites
 Pressure from government Pressure from suppliers
 To impress customers To stay ahead of competitors
 Managerial enthusiasm
 Others reasons (please specify): _____

20. What are the benefits that your company gains from its website? (Please tick all that apply)

- More customers Tasks accomplished more quickly
 Increased sales Increased revenue
 Increase productivity Enhanced status
 Market expansion Reduced operating costs
 None at all Other (please specify): _____

21. Does your company intend to expand its use of its website in the next 12 months?

Yes No Don't know

22. Using the scale below, how important is the company website to your business in general?

Not at all important 1	Not important 2	Moderately important 3	Important 4	Very important 5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Government ICT funding

23. Has your company ever received government funding to adopt information and communication technology (ICT)?

Yes No (If 'No', please proceed to Question 27)

If 'Yes',

a) has your company received funding from any of the following government ICT programmes? (Please tick all that apply)

<input type="checkbox"/> E-commerce grant programme	<input type="checkbox"/> E-manufacturing grant programme
<input type="checkbox"/> RosettaNet programme	<input type="checkbox"/> TIGeR programme
<input type="checkbox"/> HeadStart programme	<input type="checkbox"/> Don't know
<input type="checkbox"/> Other (please specify): _____	

b) using the scale below, how important has government funding been in your adoption of ICT?

Not at all important 1	Not important 2	Moderately important 3	Important 4	Very important 5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. Has your company ever received 'e-commerce grant' funding to adopt e-commerce?

Yes No (If 'No' Please proceed to Question 27)

25. Did your company have a website before receiving the e-commerce grant?

Yes No

If 'Yes', how was the website developed?

<input type="checkbox"/> In house	<input type="checkbox"/> With a parent company	<input type="checkbox"/> With universities
<input type="checkbox"/> With government bodies	<input type="checkbox"/> With suppliers	<input type="checkbox"/> With service providers
<input type="checkbox"/> Other (please specify): _____		

26. Using the scale below, in general, how important has this grant been in your adoption of e-commerce?

Not at all important	Not important	Moderately important	Important	Very important
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Personal information

27. What is your position in the company?

Owner manager
 Managing director
 Manager
 Other position (please specify): _____

28. Please indicate your gender: male female

29. Please indicate your ethnicity:

Malay
 Chinese
 Indian
 other (please specify): _____

30. What is your age (in years)?

Under 21
 21-30
 31-40
 41-50
 51-60
 61 or over

31. What is your highest level of educational qualification?

LCE/SRP/PMR
 Diploma *
 Masters degree
 MCE/SPM/HSC/STPM
 Bachelor degree or equivalent *
 Ph.D. *
 Other (please specify): _____

*Please indicate the subject area of your tertiary qualifications:

Sciences
 Engineering
 Arts
 Humanities
 MBA / Business Studies
 Social Sciences (excluding Business Studies)

33. Have you ever lived overseas for any single period longer than six months?

Yes
 No

If 'Yes', where? (Please tick all apply)

Singapore
 Japan
 United Kingdom
 Europe (excluding the UK)
 Australia
 United States
 Other (please specify): _____

Any comments?

Would you like a copy of the summary of the results of this research?

Yes

No

If **YES**, please write your name and address below (or attach a business card):

Name:	_____
Position:	_____
Address:	_____

Thank you very much for completing the questionnaire. Your contribution to this study is highly appreciated. Please return this questionnaire in the envelope provided.

APPENDIX IV

Analysis between independent and subsidiary firms

Test Statistics (a)

	Does company have Internet connection ?	Does company have email?	Communicating with customers/suppliers	Sending company brochures to customers/suppliers	Accepting customers orders
<i>Mann-Whitney U</i>	11806.5	11373	11883	11993.5	11492
<i>Wilcoxon W</i>	122962.5	122529	13209	13319.5	122648
<i>Z</i>	-0.93704	-1.68456	-0.25607	-0.01921	-0.57772
<i>Asymp. Sig. (2-tailed)</i>	0.348739	0.092074	0.7979	0.984676	0.563451

Test

Statistics(a)

	Billing customers	Personal use	Does company buy online?	Does company has website?	Online brochureware
<i>Mann-Whitney U</i>	11228.5	11268	5015	11961	11889
<i>Wilcoxon W</i>	122384.5	12594	51986	13287	123045
<i>Z</i>	-1.00091	-0.8201	-0.40019	-0.05683	-0.13247
<i>Asymp. Sig. (2-tailed)</i>	0.316868	0.41216	0.68902	0.954679	0.894609

Test

Statistics(a)

	Online catalogue	Online catalogue with prices	Online enquiries	Online ordering	Online payment
<i>Mann-Whitney U</i>	11880	11674.5	11739	11779.5	11722.5
<i>Wilcoxon W</i>	123036	13000.5	13065	122935.5	122878.5
<i>Z</i>	-0.1451	-0.36977	-0.28292	-0.24901	-0.32429
<i>Asymp. Sig. (2-tailed)</i>	0.884629	0.711554	0.777237	0.803352	0.74572

Test

Statistics(a)

	Lower costs	Eye new business	Enhance company image	Qualify government subsidies	Follow the trend
<i>Mann-Whitney U</i>	11934	11421	11424	11550	11253
<i>Wilcoxon W</i>	123090	12747	122580	12876	12579
<i>Z</i>	-0.08246	-0.62676	-0.62503	-0.50779	-0.79966
<i>Asymp. Sig. (2-tailed)</i>	0.934277	0.530818	0.531954	0.611604	0.423911

Test
Statistics(a)

	Essential part of business	Website nice to have	Allow company to trade internationally	Pressure from customers	Compete with other websites
<i>Mann-Whitney U</i>	11397	11994	11223	11673	11230.5
<i>Wilcoxon W</i>	122553	123150	12549	122829	122386.5
<i>Z</i>	-0.64193	-0.01773	-0.82672	-0.37693	-0.85197
<i>Asymp. Sig. (2-tailed)</i>	0.520918	0.985851	0.408397	0.706223	0.394232

Test
Statistics(a)

	Pressure from government	Pressure from suppliers	To impress customers	To stay ahead competitors	Managerial enthusiasm
<i>Mann-Whitney U</i>	11941.5	11941.5	11967	11524.5	11929.5
<i>Wilcoxon W</i>	123097.5	123097.5	123123	122680.5	123085.5
<i>Z</i>	-0.07828	-0.07828	-0.04547	-0.50641	-0.0867
<i>Asymp. Sig. (2-tailed)</i>	0.937609	0.937609	0.963731	0.612567	0.930908

Test
Statistics(a)

	More customers	Tasks accomplished more quickly	Increased sales	Increased revenue	Increased productivity
<i>Mann-Whitney U</i>	11890.5	11799	11898	11983.5	11286
<i>Wilcoxon W</i>	123046.5	122955	123054	123139.5	122442
<i>Z</i>	-0.12563	-0.22962	-0.11729	-0.02926	-0.78218
<i>Asymp. Sig. (2-tailed)</i>	0.900027	0.818388	0.906634	0.976653	0.434112

Test
Statistics(a)

	Enhanced status	Market expansion	Reduced operating costs
<i>Mann-Whitney U</i>	11139	11736	11878.5
<i>Wilcoxon W</i>	122295	122892	123034.5
<i>Z</i>	-0.91459	-0.28737	-0.14392
<i>Asymp. Sig. (2-tailed)</i>	0.360406	0.773826	0.885561

Grouping Variable:
Ind_Sub

a

APPENDIX V

Noor Azuan Hashim
The Sheffield Management School
Sheffield University
Sheffield S1 4DT
United Kingdom
E-mail: N.Hashim@sheffield.ac.uk

3 October 06

Madam X
Director
ICT Policy Division
Ministry of Science, Technology and Innovation, Malaysia
Level 5, Block C5, Parcel C
Federal Government Administrative Centre
62662 Putrajaya

Dear Madam X

As discussed previously through our telephone conversation on Monday (2 Oct 2006), I am delighted that you have agreed to have a discussion with me regarding my research. I am a faculty member at Universiti Kebangsaan Malaysia (UKM) and currently a Ph.D. researcher in The Sheffield University Management School, University of Sheffield, United Kingdom, under supervision of Professor Stuart Macdonald. My research topic is e-commerce and SMEs in Malaysia. The study is about how well e-commerce is adopted and used among SMEs.

For the richness of information in this study, **I need to interview the policymakers that deal with ICT in the country.** I would like to request your kind cooperation in this matter by allowing me to have an interview/ discussion session with you. My focus is to seek what are the government roles in facilitating the adoption and how it is done in order to encourage the companies, particularly the SMEs in using ICT in their business.

This study is important because it will help us develop a better understanding of how SMEs are adopting ICT, specifically e-commerce and what government could provide to this adoption. The findings of this study will also help policymakers develop more effective policies in encouraging SMEs in adopting ICT in their business. We assure you that we will keep confidential any information you wish to be treated so.

Thank you very much for your cooperation.

Yours sincerely

NOOR AZUAN BT HASHIM

Date of Interview: 5 October 2006

Time: 3 – 6 pm

Person interviewed: Madam X
(Director of ICT Policy Division)

Questions:

- Basically, what has the government done to develop ICT in the country?
- How is the ICT structure developed in the country: who is responsible to whom?
- Why is the government interested in ICT and e-commerce?
- Why did they give a grant to companies to adopt ICT?
- Why they want SMEs to be e-commerce capable?
- To what extent do they think they have succeed in promoting ICT especially e-commerce to companies?
- Why SMEs are not adopting ICT readily as the government wants it to be?
- What are the steps they have taken to take make SMEs adopt ICT, particularly e-commerce? How did they do it? If they still plan for SMEs to be e-commerce capable, how they are going to do it and why?
- What is the government's hope for SMEs?
- What is the potential of SMEs adopting ICT in the view of the policymakers?

APPENDIX VI

Noor Azuan Hashim
The Sheffield Management School
Sheffield University
Sheffield S1 4DT
United Kingdom
E-mail: N.Hashim@sheffield.ac.uk

5 October 06

Mr Yap Kim Wah
Managing Director
AAC Distribution Sdn Bhd
25, Jalan Emas Putih
Taman Sri Putri
81300 Skudai
Johor

Dear Mr Yap Kim Wah

As discussed previously through our telephone conversation on Friday (29 Sept 2006), I am delighted that you have agreed to have a discussion with me regarding my research. I am a faculty member at Universiti Kebangsaan Malaysia (UKM) and currently a Ph.D. researcher in The Sheffield University Management School, University of Sheffield, United Kingdom, under supervision of Professor Stuart Macdonald. My research topic is e-commerce and SMEs in Malaysia. The study is about how well e-commerce is adopted and used among SMEs.

For the richness of information in this study, **I need to get more details on e-commerce usages in your companies.** I would like to request your kind cooperation in this matter by allowing me to have an interview/ discussion session with you. This study is important because it will help us develop a better understanding of how SMEs are adopting ICT, specifically e-commerce. We assure you that we will keep confidential any information you wish to be treated so.

Thank you very much for your cooperation.

Yours sincerely

NOOR AZUAN BT HASHIM

Date of Interview: 10 October 2006

Time: 11 am – 1 pm

Person interviewed: Mr Yap Kim Wah

Some sorts of questions:

- What kind of e-commerce do you use in your company?
- Why do you use or do not use e-commerce?
- What do you expect of e-commerce?
- How do you find the government's initiatives for SMEs to adopt e-commerce?
- Are going to make e-commerce available in your company? Why or why not?

APPENDIX VII

15 November 06

Mr Yap Kim Wah
Managing Director
AAC Distribution Sdn Bhd
25, Jalan Emas Putih
Taman Sri Putri
81300 Skudai, Johor

Dear Mr Yap Kim Wah

I believed that your company has received a set of questionnaire regarding a survey of e-commerce adoption among Malaysian SMEs recently (before Hari Raya Eidul Fitri).

As a researcher in this survey, I would really appreciate if you could spend a bit of your time to answer my questionnaire and return back to me using the enclosed envelope as soon as you can. Your response is vital for the successfulness of this study. The findings of this survey are really valuable for my study and at the same time would give some insights of how SMEs in the country are adopting ICT, specifically e-commerce. This study will also help policymakers develop more effective policies in encouraging SMEs in adopting ICT in their business in the future.

So far, the responses that I have received are so small. It is so difficult for me to analyse the data as well as to make the conclusion for this study. I would like to beg for your time and your help to complete this questionnaire. Hopefully, both your company and I would benefit from the findings of this survey.

Attached is a letter of support from my supervisor, Professor Stuart Macdonald in Sheffield University Management School, United Kingdom. As mentioned previously, all respondents will receive a short report of the survey findings. As a further token of my appreciation, three respondents will be chosen to receive annual subscriptions to either *The Economist* or *Business Week* magazines.

Thank you very much for your cooperation.

Yours sincerely

Noor Azuan Hashim

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azuhashim@yahoo.com

16 November 2006

Mr Yap Kim Wah
Managing Director
AAC Distribution Sdn Bhd
25, Jalan Emas Putih
Taman Sri Putri
81300 Skudai
Johor

Dear Mr Yap Kim Wah

I write in support of Noor Azuan Hashim's request that you participate in her research by completing the attached questionnaire. Noor Azuan is one of my ablest Ph.D. students and has undertaken a very important piece of work, looking at e-commerce adoption/usages among Malaysian SMEs. At the moment, most research in this area is drawn largely from US and UK textbooks and study. We have to understand how well e-commerce is adopted and used among SMEs in the country in order to find the success or otherwise of this difficult process. To do this, we need to seek information about e-commerce in your firm, and your views on e-commerce adoption and use.

I would like to assure you that Noor Azuan is a very hard working student. She has designed a very good study that, if supported by a good response rate, will both assure her of Ph.D. and more importantly provide your organization and the wider Malaysian business community with a potential insight into how best to manage ICT rationalization, particularly e-commerce. This study is important because it will help us develop a better understanding of how SMEs are adopting e-commerce. The findings of this study will also help policymakers develop more effective policies in encouraging SMEs in adopting ICT in their business.

Please feel free to get in touch with me if you have any questions about the research. In the meantime, I would be very grateful if you could help Noor Azuan's research by completing and returning the attached questionnaire.

Yours sincerely

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The Sheffield University Management School
University of Sheffield
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